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ARBORETUM BULLETIN

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Concerning this issue —

The death of Dean Gordon D. Marckworth, Editor Emeritus of the *Arboretum Bulletin,* on August 25th occurred almost at press time when there was neither time nor space to include a proper obituary notice. A more complete account of his life and contributions to the University of Washington as well as the Arboretum Foundation will appear in the next issue. In the meantime we extend our sympathy to his family.

We were very sorry to be unable to include the formal publication of *Garrya* x *issaquahensis* 'Pat Ballard' in the preceding issue (Vol. 43, No. 2) with Brian Mulligan's note on the revision of the genus *Garrya.* However, it ties in very nicely this time with a series of articles on plant introduction, since published description of new plants is one step in that process.

The article on Sissinghurst Castle should have wide appeal; it combines the description of a lovely garden with added insight into the lives and characters of two famous 20th Century English writers, Vita Sackville-West and Harold Nicolson.

The Fall issue traditionally contains annual reports from the Arboretum and from the officers of the Arboretum Foundation. This is an important function of our publication, for it puts on record the events, programs, statistics, et cetera of the year just past. Everything from weather in the Arboretum to the progress of the Master Plan Update, from plantings in the Arboretum to contributions by the Arboretum Foundation is there in print for ready reference.

Frank Brockman's last article on UW campus trees completes a series that began in the Fall 1979 issue. Many readers have found this to be a useful tool in visiting the campus or in locating mature specimens of tree species. It is hoped that eventually Mr. Bockman's detailed knowledge in this field may be published by the University Press in book form, with a different format, and with added information and illustrations.

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ARBORETUM BULLETIN

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Sissinghurst: View toward the Cottage with poplars behind.
See article, "Sissinghurst: The Garden and Its Creators".
Photo: Brian O. Mulligan

Facets of Plant Introduction

JOSEPH A. WITT
PATRICIA GUTTER
AND
IRMGARD C. GRABO

Rehderodendron macrocarpum **showing its unusual two-inch fruits produced in July. Photo: Whitie Marten**

Editor's Note: For serious gardeners and horticulturists, the introduction of plant materials is of prime importance; only by this means can we obtain unusual plants, better adapted plants, and those that are well-suited to the relatively small scale of contemporary gardens. Horticulturists are becoming more sensitive, as well, to the requirements of public plantings where materials may be employed on a larger scale but frequently must cope with environmental stress.

Over the past few years the Arboretum Bulletin *has explored a variety of approaches to plant introduction. Some of these articles include: Marvin Black on street trees (Vol. 41, Nos. 1 & 3); Betty Miller on pollution tolerance (Vol. 41, No. 4 & Vol. 42, No. 1); Arthur Kruckeberg on the possibilities of successfully introducing plants of borderline hardiness (Vol. 40, No. 4); William Hatheway on an overall strategy for introducing new plants into the Arboretum (Vol. 41, No. 3); Joe Witt has discussed the function of the International Seed Exchange (Vol. 41, No. 2). And finally, we have published reports on the progress of the Ornamentals Hardiness Program (Vol. 41, No. 1 & Vol. 42, No. 4), which is one of the important means the Arboretum has developed for testing new materials.*

The following articles were intended to be a comprehensive look at contempory practical applications of plant introduction. In other words, how does the Arboretum get its new plants into our gardens once they have been proven worthy? And, as a corollary, what roles do the landscape designer and the nursery play in this process?

Obviously we have approached this complex subject from only three points of view, having omitted any number of other means by which exciting new plants may be introduced. But, after reading these three thoughtful articles, it should have become clear that in the long run it is you, the gardener—the consumer if you will—who must become involved. It is an informed public that supplies the demand for introductions such as the desirable plants mentioned in Mr. Witt's article below.

JOE WITT, FOR THE ARBORETUM:

On December 6, 1934, the University of Washington and the City of Seattle signed an agreement establishing Washington Park for arboretum purposes. Paragraph 5 of this agreement reads in part: "Second Party [the University] shall, as soon as possible, establish such arboretum and botanical garden, including in such work among other things, the following items: (a) Procuring seeds and plants from all parts of the world

that may be suitable for growth in this climate. (b) Establish quarantine station for the introduction of shrubs and trees from foreign countries."

Let us reconstruct the activities of the staff members of the Arboretum in the mid- and late 1930's. The site was rapidly changing from undeveloped parklands covered with brush and second-growth trees into an open area which could absorb thousands of plants. They had their objectives outlined in the agreement quoted above and had a master plan prepared by the Olmsted Brothers which indicated what and where to plant. Where were they to get all the trees and shrubs needed to change Washington Park into an arboretum? Plant introduction on a massive scale was the only answer; so where did they start?

Fortunately, tremendous resources were available, especially the Arnold Arboretum of Harvard University, which had been (and continues to be) one of the most active centers for the bringing of non-agricultural plants into North America. Their introduction programs had been under way for several scores of years, especially through the efforts of such men as C.S. Sargent, E.H. Wilson, J.G. Jack and others who had made wide ranging expeditions, particularly into the Far East, for new plants. Not only were they successful in bringing back new material, but they were equally successful in propagating and distributing the best of it. The Arnold Arboretum, in addition to having an active introduction program, were most generous in sharing their plant materials and the early Arboretum staff could count on them to supply many new and uncommon plants and seeds. Other well-established arboreta and botanical gardens indicated their willingness to give surplus plant material; so our staff could expect to receive stock from such institutions as the Morris Arboretum in Philadelphia and the Morton Arboretum near Chicago.

Actually they did not have to go far afield to find generous donors. Many local gardeners had been introducing and testing new plants for years, and some of these innovative people were active in getting the fledgling arboretum underway. Gardeners such as Herbert Ihrig, Dr. Cecil Tenney, Mrs. T.C. Frye and Donald Graham, to name only a few, had gardens full of superior plants which they offered freely. The local nursery industry also had a strong interest in seeing the new arboretum become a success, and they promised to supply us with their best materials.

Lastly, there was the worldwide fraternity of botanical gardens which had a long-established seed exchange. This gave the new arboretum an entree into the collections of the world's greatest gardens, especially to those of the Royal Botanic Gardens of Kew and Edinburgh and the venerable institutions in Europe such as the Arboretum des Barres, France, the Jardin Botanique, Geneva, Switzerland and the Botanischer Garten, Darmstadt, Germany.

The mere introduction of plants and seeds was only part of the staff's responsiblity. They also had to build the facilities to grow this material to such a size that it could be planted on the new Arboretum grounds. Greenhouses, lath houses, cold frames and a nursery had to be available, along with skilled propagators and gardeners, to deal with the influx of plants. Eventually these introductions were planted on the grounds and records were kept of when and where they were planted and how well they were growing.

Before we turn from the past, perhaps this would be a good time to stop and examine the reasons why plant introductions are such an important facet of an arboretum program. We might wonder why new plants are continually being introduced and why an institution such as the Arboretum should spend the necessary time, effort and funds on such endeavors. Basically it is a question of human needs and curiosity. Most people relate to plants. Plants are, after all, the basic life form on which all but a few organisms depend. Human beings rely on plants for food, shelter, energy and certainly aesthetic pleasure. It is this latter factor, plus the natural desire for something new, unusual or especially beautiful, which dictates a large part of the Arboretum's plant introductions. Curiosity comes into play when a gardener, horticulturist or arborist wonders: can I

grow this? will it be something I can use? can I improve on it by selection or hybridizing? where can I put it in my garden? Many of these same motives lie behind the Arboretum's plant introductions. The policies that have determined over the past years which plants will be introduced into the collections are based first on the directives given in the 1934 agreement, second on the premise that the Arboretum is primarily concerned with woody species, and third on the curiosity of those in charge. This latter, which might be called the human equation, makes most interesting reading when one goes back through the acquisition books, those running records of what plants were introduced since 1936.

As might be expected, during the first half dozen years,many of the introductions were aimed at fleshing out the bare grounds and at developing the basic collections. No special effort was made to bring in the new or unusual, although some of the plants brought in then are still among the most rare or unusual in the collections. As an example, *Rehderodendron macrocarpum* came in 1938 from the Arnold Arboretum and for many years was the only plant of this species in North America. During the war years of 1942 through 1945, little introduction activity took place, but from 1946 through the end of the 40's there appeared to be an almost panic-stricken attempt to bring in seeds from botanic gardens around the world. Much good material was introduced, but some of it was of highly questionable value. Whoever was in charge of ordering in 1945 and '46 would sometimes ask for seeds of plants that were native not only to the state, but to the Arboretum grounds!

As the collections grew, there was more and more of an effort to introduce those plants which were less common, which had potential merit either for ornamental or commercial use and which might have a reasonable chance of surviving in Seattle's climate. This is not to say that all tender or semi-hardy plants were excluded. Testing these in the hope of finding a race of hardier individuals is, after all, part of the charge given in the 1934 agreement. Over the years, certain genera and/or species have been introduced repeatedly in the search for the hardy strains. *Eucalyptus* are a good example, and the Arboretum has introduced and killed about 400 plants of eucalypts in the past thirty years in this search.

As has been mentioned in a previous issue of the *Arboretum Bulletin* (41[2]:31-32,1978), seeds have been a major source of plant introductions but have proved to be somewhat unreliable, especially if their source is a large botanic garden or arboretum. The danger of misidentity or hybridity is too great to give confidence in these sources. Current introductions now are restricted more or less to seeds (or plants) from a known source, preferably from wild collections. The above, of course, refers only to plant species. Cultivars, named or known hybrids, such as the many thousand rhododendrons and azaleas, are introduced in their own right.

Once a new plant has been brought into the Arboretum collections, whether by seed, cutting or living specimen, a second phase of introduction goes into operation, that is, testing. In most instances where more than one individual plant is involved, an effort is made to find several locations within the Arboretum to test it. Again an example: when *Metasequoia glyptostroboides,* the dawn redwood, was introduced in 1948, nothing was known about its behavior in cultivation. Seedlings, when they were large enough to withstand the rigors of the Arboretum, were planted in a wide range of sites, sunny or shady, moist or dry, sandy soil or heavy clay and so forth. Within a few years, it became evident that those trees which had a moist, but friable soil, were outperforming their siblings in other sites.

This type of testing is not difficult when there are several plants available. However, often there may be only one or two plants of a given species; so wide testing is not possible. In this case, a search of the literature may give a clue to the best location or, if even this information is not available, then some cultural knowledge of a nearly related species will be helpful. Lacking even this rudimentary information, the next best thing is a green thumb or, more pedantically, reliance on horticultural intuition as to where a plant will thrive.

The third phase of plant introduction is observation and evaluation. Returning to the genus *Eucalyptus*, the 85 or so introductions from past years have been tested by our coldest winters and so far only one species, *E. pauciflora* subsp. *niphophila,* snowgum — raised from seed from the Botanic Garden, Canberra, Australia — has been successful. Evaluation of these plants continues and a common problem has surfaced: how does one propagate the superior plant so that it can be reasonably available? Unfortunately, our snowgum does not produce seedlings which have the same characteristics as the parent trees. They are distinctly inferior in habit and are weak growers. In order to increase the trees successfully, we would have to depend on some form of vegetative propagation, a difficult feat for eucalyptus and a negative factor if one is concerned about ultimate distribution to the public.

In addition to ease of propagation and hardiness, other evaluation factors to be looked for may include disease and pest resistance, unusual form or habit, off-season flowering, attractive flowers, fruit or foliage or a combination of these. Obviously, this is a time-consuming process, and many trees or shrubs will be watched for as much as 10 to 20 years before any decision is made about their worth.

Once this decision is made, there is one final phase: actually releasing the plant for general distribution. Again, an example of how the Arboretum has done this might be in order. *Mahonia* 'Arthur Menzies', a hybrid of *M. lomariifolia,* was judged, after a considerable period of testing and evaluation, to have the qualities to make it a good candidate for broader distribution. A number of young plants was offered to members of the Washington State Nurserymen's Association through their monthly newsletter. It is Arboretum policy to share only enough plant materials with any one nursery to give them an established plant from which to propagate. Therefore, only two or three plants were given to any respondent. From that point in time, it was up to the nursery to do its own propagation and eventual distribution. This method is not the only route for getting better Arboretum plants to the public. More commonly, a nursery will ask if it might have a few cuttings or scions of some particularly good specimen or group of plants. These requests are filled if the plants have cuttings available and aren't something still under study. Very few trees or shrubs in the Arboretum would fall under this latter category; hence, nearly all of the five thousand or so taxa in the collections are available for distribution.

Perhaps the most difficult task of this last phase of plant introduction is convincing the nursery industry that there might be a potential market from some plant not now in the trade. This is a common complaint of most horticultural institutions attempting to bring some fine new and unique plant to the public's attention. There is a bit of Catch-22 in the fact that unless the public demands a plant, the nursery industry won't stock it, and unless the nurseries carry the plant, the public won't demand it. Part of an arboretum or botanical garden's work in plant introduction must be devoted to public relations. Few institutions, including this Arboretum, are willing to go so far as to engage in the "hard sell" of their products. Hence, most have many, many really good plants waiting to be made public.

As the Arboretum nears its 50th anniversary, it seems clear that it has fulfilled its mandate to be a plant-introduction center. Indeed, there may have been too many introductions in the past and some should be weeded out as being redundant or too aggressive, too disease prone or having some other major fault. This weeding must be done with care and with the object of replacing the discards with new introductions for testing and evaluation. This activity will keep the plant collections renewed and the Arboretum the vital and interesting place that it is now.

(Continued on next page.)

PAT GUTTER, FOR LANDSCAPE DESIGNERS:

The rift between nurserymen, landscape contractors and landscape architects is common knowledge among those who deal with the installation of plant materials in the landscape. This rift, as I have called it, is certainly not insurmountable and, from every indication, is narrowing. The difficulties may be likened to the proverbial chicken/egg syndrome. Briefly stated, contractors say that landscape architects specify plants without knowing if they are available and, if available, whether they are in sufficient quantity to complete the job. They claim that all too often their time is wasted by having to track down obscure or unavailable plant materials which have been specified by landscape architects. Landscape architects counter these claims by saying that nurserymen aren't growing the types of materials that landscape architects desire to specify, but are, in fact, continuing to grow those plants with which the public is most familiar. Generally, these are the plants which can be propagated easily and, because they are known by the public, the nurserymen are sure they will be sold. Nurserymen, on the other hand, state that for the most part the requirements of landscape architects are too unpredictable. Landscape architects, they say, frequently establish trends in plant use. These may last for a few seasons or for several years. During this time, the plants in vogue are specified heavily. At the end of this trend, however, the nurseryman is often stuck with an abundance of materials that may prove difficult to sell. Although the problem looks confusing at first glance, it certainly is not insurmountable. I introduce it in the context of this article, not to air the grievances of our industry publicly, but rather that a greater insight may be obtained into the problems and potentials of the landscape roles in plant introduction.

*Professor Pat Gutter divides her time between the UW's Department of Landscape Architecture and her work as design associate with John Ullman Landscape Consultants. At present she is inventorying and assessing the value of existing plant materials in the Bellevue Square for reuse on that 37-acre site.

It is important to remember that there is often as much variation between landscape architects and their approach or philosophies of plant use as there is between doctors and their approach to medicine. In preparing this article, I consulted several landscape architects to obtain their thoughts on the subject of plant introduction and the role of landscape architects. Many of their views are contained in this article and I now publicly thank them for their contribution. This notwithstanding, I do not speak for all, and perhaps not even the majority of, landscape architects who work with or specialize in plant materials as part of their professional practices.

Planting Philosophies

The ways that plants can be used in the landscape are infinite, one of the most extreme perhaps being the approach which resembles that of a plant collector. Variety of materials becomes as important a factor in plant selection as hardiness, soil preference, moisture requirements, et cetera. This may be contrasted with an approach equally extreme whereby some designers use plants primarily as objects of design. In this instance, the designer attempts to achieve the desired effect by using a severely restricted plant palette. The challenge then becomes to select those materials with the broadest range of design and horticultural characteristics. This supposedly gives the architect the broadest range of design potential. A rather simplistic example of this approach would be to select a plant because it has both a good fall color and showy spring flowers, thereby fulfilling two desirable characteristics with one material.

Another example is the selection of plants that are intended to be used informally but should be design warrant; they could be altered by pruning, clipping or some other form of shaping to produce a more formal effect, *Photinia* x *fraseri* and *Prunus lusitanica* being two common examples. The successful utilization of this approach depends totally on the plant palette. The materials chosen must be versatile and have the ability

to perform well in a wide range of evironmental situations. The preparation of such a palette requires sound knowledge of plant materials and a basic understanding of design principles. The above approaches are admittedly extreme and most designers fall somewhere in the middle. They make efforts to utilize new varieties of plant materials whenever possible, but they rely principally on those materials of which they have experience and are thereby convinced will perform well in the particular situation.

The Landscape Architect's Role

Where or what then is the landscape architect's source of these new varieties of plant materials? Landscape architects are not plant growers. There is a somewhat small group of landscape designers who also own and operate nurseries, as well as nurserymen who do landscape design, but these are the exceptions, not the rule. For a variety of reasons, such practices are not encouraged by the professional societies and organizations. Traditionally, the role of landscape architects in plant introductions has been that of disseminator of plants into the landscape. In this capacity, landscape architects are a vital link in the chain from propagation to plant installation. They fulfill this function best when they are most informed concerning materials availability from growers and the requirements and limitations of those materials.

Many of the more plant-oriented landscape architects are both nursery hounds and plant collectors. This activity, therefore, becomes one of the major ways that they learn of new materials which can be introduced on their projects. Even for the landscape architect who does not become directly involved in the search for new materials, the rapid changes in environmental conditions—new stresses, pollutions, diseases, insects and now volcanic ash—all force the search for plants which demonstrate greater ability to perform under increasing environmental stresses. In their search for improved plants, landscape architects frequently find that the best species for the job may be listed in reference sources as being available in cultivation, but when they attempt to locate them for a job, they are unable to find them in sufficient quantities. Nevertheless, having knowledge of these materials and their attributes offers the opportunity for landscape architects to use them on future jobs.

It is at this point that the landscape architect has a great deal to do with the introduction of new plant materials. Landscape architects can bring such materials to the attention of growers and arrange to have them propagated in what is known as growing contracts. Contract growing is becoming more widely accepted in its application. It allows a landscape architect, acting as the authorized agent for his client, to have certain plant materials grown for use on a specific job. The grower agrees to propagate and maintain the specified materials in the agreed-upon conditions until such time as they will be installed on the job site. Contract growing is generally easier to accomplish when the need is for shrubs and ground covers. It does have potential for trees when the project is to be phased over a period of years or when smaller sized trees are called for. The further the planning exceeds the time for planting, the greater the potential of contract growing and the greater the opportunities to introduce materials that are not readily available on the market. When there is not a sufficient time-lag between planning and planting, the landscape architect is forced to select from those materials at nurseries which are available in sufficient quantities and size to install the project as closely to the desired specifications as possible. With most projects, this is usually the case, and for the most part plants selected by landscape architects are chosen primarily on the following factors: budget, availability, and the material's past performance record.

This does not greatly favor the attempts to introduce new materials. Nonetheless, the need for new materials is ever-increasing as plants in the landscape are subjected to greater environmental stresses through pollution, insects and diseases, changes in ground water tables, and the variety of forces previously of less significance. The need for plant materials with greater tolerances has

created a ready market for all good introductions.

This does not necessarily mean new clones or cultivars. From the point of the landscape architect's role in plant introduction, it may simply mean the reintroduction of certain materials that have fallen into disuse. This occurs for a variety of reasons—the end of a trend as previously mentioned, lack of availability, et cetera.

Another area open to the landscape architect in the attempt to introduce new materials is that of using common plant materials in uncommon ways. One of the greatest potentials along this line is a use of native materials in ways other than the traditional woodland gardens. The potential of non-traditional plant use is as vast as the skill and imagination of the designer and the appreciation of this approach by the client. In both of the above examples, the landscape architect's principal contribution is an awareness and understanding of the environmental factors and site conditions that have the potential to adversely affect the plant materials.

Once the selections are made by the landscape architects, it is also their responsibility to be sure that the plants are properly installed. Soil and moisture conditions must be correct and drainage is as important a factor as sun and shade. Incorrect installation of plants, especially if they are newly introduced, is a disservice to the entire industry. Frequently on residential sites where the new materials are in small enough quantities if failure does occur, it becomes a relatively simple process to replace them with a more reliable material. When the process is on a much larger scale, however, the failure of a plant material in the quantities so often required on large projects could prove devastating.

If landscape architects are to take an aggressive role in the introduction of new plant materials, they must make it their purpose to seek out reliable information on new plants with good landscape potential. Having obtained this information, they must take an active part in the dissemination of it to other landscape architects, contractors and nurserymen. Information on plant materials that can or should be introduced on a much larger scale in the landscape are available from several sources. The many and varied plant societies and foundations have begun efforts along this line by making themselves, their expertise and their support available to landscape architects, nurserymen and contractors. Such efforts are essential if we are to collectively gain greater knowledge and greater plant varieties in our landscape.

IRMGARD GRABO, FOR THE NURSERY TRADE:

The term "plant introduction" conjures up visions of plant hunters collecting seeds on some Asian mountainside or in a rain forest in New Zealand, or of a research hybridizer. In either case there is a long, hazardous interval between seeds and resulting plants, plants that may be available to a very elite group of gardeners bent on growing only the rare and unusual.

But in reality, plant introduction is not quite as complicated. Certainly, the retail nursery is at the end of a long line of people involved in making new plants available; but also it is an intermediary between the "plant introducers" and the gardening public.

Naturally my views about the role the retail nursery plays and could or should play in plant introduction are quite subjective and may reflect a bit of wishful thinking. For one thing, I am now assuming that, in order to fulfill this role of intermediary, people working in nurseries are plantsmen/women who know their plants well but are always eager to learn more. I am further assuming that for the most part they are also plant collectors themselves and that, like most collectors, they are willing and eager to share their enthusiasm and knowledge with the public. Thus, they are also teachers.

*Irmgard Grabo obtained her interdisciplinary BA in Urban Horticulture from the University of Washington several years before the program that is now being developed under Dr. Tukey was even considered. She is a four-year veteran of the King County Master Gardener Program. Currently she is working for the Wells-Medina Nursery and doing private consulting.

The responsibilities of the retail nursery are twofold with respect to plant introduction: first, searching for and finding new plants suitable for the particular geographic area; second, making prospective customers aware of new plant materials available, and of their merits and specific uses.

Retail nurseries are in the best position to add plant introductions to their inventory. Not only are they familiar with large and small wholesalers but also they come into contact with amateur growers. It is the latter who often can offer interesting new plants on a very small, experimental scale, something which is not economically feasible for the large growers. Therefore a nursery may become the first outlet for an amateur propagator.

Nurseries eager to help introduce new plant materials may also buy small quantities of newly raised plants through plant sales sponsored by horticultural societies. Since nurseries have a much wider spectrum of customers than the plant sales, which rarely take place over more than two days, potentially more people can see and find out about newly available plants.

In most cases, when the nursery decides to stock newly introduced plants, past experience with the same or related species, genus or plant family can help to indicate whether such a plant may be suitable for local climatic and soil conditions. In other cases buying in of new plants may be something of a gamble but it can provide valuable experience about growth habits, cultural requirements, et cetera.

The nurseryperson is then prepared for the other important function: to tell prospective customers about a new plant introduction, providing full information about the plant's suitability for a particular environment, and to point out its respective merits and possible drawbacks in comparison with similar plants that might be old familiars.

Perhaps the most important function of the nursery is as a place where people learn about plants, their requirements, their suitability for vastly different situations. Only by making amateur and professional horticulturists alike aware of the great diversity of plant materials available, will there be continued incentive to introduce new plants. And so our gardens, our public parks and freeway plantings may become more beautiful and satisfying. While adding exciting new plants to their fields, growers may even *delete* from their lists such overused plants as, for example, *Juniperus sabina* 'Tamariscifolia', *Hedera helix* and *Thuja occidentalis* 'Pyramidalis'.

The role then of the nursery is to be an important link in the chain between horticulturists who are pioneers in plant introduction—be they collectors in the wild, hybridizers, experimental growers, or wholesalers—and members of the public who want to acquire interesting new plants.

A Letter from our Correspondent in Richland

Dear Jan:

If there is one general criticism of the Arboretum operation, it is the small number of worthy new plants introduced into commerce. I believe that there is a current opportunity to make one introduction that would draw attention.

As I checked with Joe Witt last week, he has an excellent collection of *Sorbus* hybrids. I suggest that one of the choice ones be selected and introduced. Under what name? Surely you can guess: Mountain Ash — St. Helens.

We have had a number of difficulties with our trees this year, after a relatively mild winter. As amateurs, we assume that it is a delayed result of the previous very severe winter.

Part of our trouble has been with fire blight which we expect to recur because we have a near neighbor who has a badly infected hawthorn that he doesn't want to remove. We are researching the State of Washington Code on justifiable homicide.

Sincerely,
Herb Parker

Photo: courtesy E.C. Nelson

Malahide Castle near Dublin, Ireland, home of *Garrya* x *issaquahensis* 'Pat Ballard'.

Garrya x *issaquahensis* Nelson

(*G. elliptica* Lindl. x *G. fremontii* Torr.) in Cultivation in Western USA and Ireland

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National Botanic Gardens, Glasnevin,
Dublin, Ireland

Garrya elliptica Lindl. and *G. fremontii* Torr. are both native to the western coastal states of the USA, in Washington, Oregon and California. Although the general geographic ranges of the two species overlap in Oregon and northern California, no hybrids have been recorded from wild populations. *Garrya elliptica* is found mainly along the coast, but occasionally inland, and reaches an altitude of about 900 m. *Garrya fremontii* is a montane species rarely descending below 1000 m (1)[1].

Although no wild hybrids are known, the two species have been cross-pollinated successfully at least twice in cultivation. In August 1961, seeds from a plant of *G. fremontii* growing in the garden of Mrs. Page (Pat) Ballard at Issaquah, Washington were given to the University of Washington Arboretum, Seattle, by Mrs. Ballard. Since all species of *Garrya* are dioecious, bearing male and female flowers on separate plants, this particular individual had been pollinated by *G. elliptica* growing nearby. Mrs. Ballard had no male plant of *G. fremontii*. Seedlings were raised in the Arboretum and in Ireland at Malahide Castle.

In 1956 or 1957, Carl S. English, Jr.[2], then superintendent of the grounds at the H.M. Chittenden Locks in northwest Seattle, pollinated a female plant of *Garrya elliptica* with pollen of *G. fremontii*; this is the reverse of Mrs. Ballard's chance cross. Hybrid seedlings were certainly raised, for Mr. English gave cuttings of both a male (acc. no. 41-62) and a female (acc. no. 42-62) plant to the UW Arboretum.

In 1967, the hybrid seedlings at Malahide Castle, near Dublin, Ireland, flowered for the first time; and the plants raised in Seattle, from Mrs. Ballard's seed and from cuttings furnished by Mr. English, flowered in 1968. In February 1969, Lord Talbot de Malahide submitted specimens from male plants growing in his garden to the Royal Horticultural Society's Floral Committee for an Award of Merit.

As these hybrids are attractive and hardy,

Numbers in parentheses refer to numbered references at the end of the article.

[2]Mr. English died in August 1976, aged 71. An obituary notice was published in the *Arboretum Bulletin,* April 1977.

both in northwestern USA and in Ireland, and as one clone in particular, named 'Pat Ballard', was eventually given an Award of Merit by the Royal Horticultural Society and is listed in at least one British nursery catalogue, it is now desirable to provide the hybrid with a binary name and to describe it. When he made his submission to the RHS in 1969, Lord Talbot de Malahide suggested that the binomial *Garrya* x *issaquahensis* be adopted for the hybrid (2); in appreciation of Lord Talbot's notable contribution to horticulture, his wish is acceded to.

GARRYA X ISSAQUAHENSIS Nelson[3] hybrida nova

A *Garrya elliptica* differt, foliis glabrescentibus, infra pilis longis rectis adpressis, destitutis indumentis crispis, fructibus glabrescentibus. A *G. fremontii* differt, foliis margine undulato; ovariis ubique pilis longis.

Type: cultivated in the garden at Malahide Castle, County Dublin, Ireland, *E.C. Nelson,* 1.ii.1980. holo. DBN: iso. K, RSA, UC, WSY, WTU.

Derivation: from Issaquah, King County, Washington, USA. *Issaquah* is derived from the Indian word *isquowh,* of uncertain meaning (3).

Shrub or bushy tree, to 5 m tall. Branchlets green, occasionally maroon. Leaves simple, petiolate, elliptic to ovate, leathery, persistent. Petioles red or green, often slightly flattened on upper surface, (10) - 15 - (20) mm long. Leaf blade (30) - 60 - (100) mm long, (20) - 40 - (60) mm broad; apices shortly mucronate, bases cuneate to obtuse; margins entire, undulate, occasionally slightly revolute; glabrous above, shiny dark green, below with a few scattered long appressed straight hairs but often becoming glabrous, light matt green.

Staminate inflorescences catkin-like, unbranched, pendulous. Peduncles with minute appressed straight hairs. Staminate floral bracts acuminate, apical extensions often reflexed in lower involucres, with very short appressed straight hairs near base, upper part glabrous or nearly so, basal part bright red, upper part light green but colours fading as inflorescence ages and elongates. Internodes with scattered long straight hairs. Staminate flowers on short pedicels, sometimes exceeding the involucre after anthesis. Pistillate inflorescences catkin-like, rigid, pendulous. Pistillate floral bracts lanceolate to obovate, lower ones with pronounced reflexed apical extension, with scattered short appressed straight hairs. Ovaries with long silky hairs overall. Fruits subglobose, glabrous except for a few hairs near apex, blackish-brown.

From *G. elliptica, G.* x *issaquahensis* may be distinguished by the absence of an indumentum of short curled hairs on the lower surface of the leaves, and by the glabrous fruits. The leaves have only some scattered long hairs on the lower surface; the upper surface is glabrous. The fruits formed by the hybrid are also glabrous, apart from a few short hairs near the base of the obsolete style.

From the other parent, *G. fremontii*, the hybrid may be distinguished by the undulate and occasionally slightly revolute leaf margins, and by the hirsute ovary (see table, page 12, for taxa characters).

Garrya x *issaquahensis* 'Pat Ballard'

In 1961, the University of Washington Arboretum offered surplus seed of *Garrya*

Inflorescences of *Garrya* x *issaquahensis* 'Pat Ballard'.
Photo: courtesy E.C. Nelson

[3]Under the International Code of Botanical Nomenclature (Rec. 46c; Leningrad 1975) "when an author who...published a name ascribes it to another person" the name of the other person may be inserted, followed by *ex,* before the name of the publishing author. Thus, this hybrid may be cited as *G.* x *issaquahensis* Talbot de Malahide ex Nelson.

Comparison of the Hybrid and Its Parents		
Garrya elliptica	*G.* x *issaquahensis*	G. *fremontii*
Leaf margin strongly undulate	Leaf margin slightly undulate	Leaf plane
Leaf densely hirsute below with curled short hairs	Leaf glabrescent with long straight hairs	Leaf glabrescent with long straight hairs
Peduncle silky	Peduncle with minute hairs not appearing silky	Peduncle not silky
Male inflorescence bracts with long silky hairs	Male inflorescence bracts not silky with few short hairs only	Male inflorescence bracts glabrous
Ovary hirsute	Ovary hirsute	Ovary ± glabrous
Fruit hirsute	Fruit ± glabrous	Fruit glabrous

fremontii pollinated by *G. elliptica* from Mrs. Ballard's garden to other arboreta and botanic gardens throughout the world. The late Lord Talbot de Malahide, whose garden at Malahide Castle is renowned for its collection of rare shrubs, requested seeds, and succeeded in raising 26 seedlings of the hybrid. Seventeen seedlings were planted out as a hedge in the walled garden at Malahide in 1964. These plants flowered in 1967, and in 1970 there were 13 healthy plants, eight male and five female, surviving in the hedge. In 1980 only 10 are left.

In February 1969, Lord Talbot submitted to the Floral Committee of the RHS, a selection of shoots from the hedge. According to the entry form "4 branches [were] from one tree" (4), but it is clear from a later letter (5), that Lord Talbot in fact submitted "bits from *three* plants..." However, the Floral Committee was under the impression that all the material came from one plant, and gave Lord Talbot an Award of Merit. The revelation that the submitted material did not constitute a clone, that more than one plant was selected, caused the A.M. to be withheld, as

Female plant of *Garrya* x *issaquahensis* at Malahide Castle. Photo: courtesy E.C. Nelson

the rules state that only a named clone and not a grex (material from more than one plant of hybrid origin) could receive such an award. Lord Talbot commented that he "did not submit a clone for an award. I submitted a grex...I deliberately did not submit a clone because my eight males are all pretty well the same..." (2).

Later Lord Talbot agreed "to choose one [plant] and propagate males exclusively from that. But...[he added] there is very little to choose between two or three of them when they are at their best, and to adjudicate seriously at the end of the season is well-nigh impossible..." (6). He postponed making a selection until 1971, when he again exhibited the hybrid, noting on the entry form that "this received an Award of Merit on February 4th 1969, which was suspended...when it was realized that a grex and not a clone had been submitted. A clone is now submitted as requested (a little passe)" (7).

Unfortunately the suspension of the Award of Merit in 1969 was not publicly announced; indeed the A.M. was published (8) "Class 4...a vase of a shrub...Lord Talbot de Malahide brought over...an interesting and indeed attractive *Garrya* which was a male seedling of a hybrid between *G. fremontii,* another western American species which is seldom if ever grown in this country and has a reputation for being dull, and *G. elliptica*...the foliage was much the same as that of *G. elliptica* but smaller. The catkins were also similar in length and form, but each bell involucre of grey-green was circled

with a band of red giving the tassle [sic] a pleasant light effect..."

In 1971 the new selection, this time from a single plant, received the postponed A.M. and a note was published to the effect that "Lord Talbot de Malahide's hybrid *Garrya* 'Pat Ballard' with grey and light orange tassels received the A.M. of February 2. It should be as hardy as *G. elliptica* and with its lighter colouring be most acceptable" (9).

Which plant did Lord Talbot select as 'Pat Ballard'? In the *Arboretum Bulletin* (10), letters from the Director, National Botanic Garden, Dublin, were quoted in which Mr. Brady stated that Lord Talbot's former gardener "...identified the plant named 'Pat Ballard' as the third plant in the line planted by Lord Talbot." Lord Talbot died in 1973, but the planting records for his garden are extant, and are held in the library, Royal Botanic Gardens, Kew. These record each individual plant, its position in the garden, and, by back-referencing, dates of planting and sources. There is also a card index in the custody of the present owners of the garden, Dublin County Council. In the last completed record book (1971-72), Lord Talbot noted that 'Pat Ballard' was the third *male* plant, but the fifth plant in the hedge (11). This plant survives and is now correctly labelled; the first, third and fifth plants are male, the second and fourth are female. Given that the planting records are in Lord Talbot's own handwriting this must be taken as the definitive answer on the original selection.

In the article mentioned above in the *Arboretum Bulletin* (10), Mrs. Nan Ballard said that "so far as can be determined, the specimen plant of *Garrya* 'Pat Ballard' was not then or later described for naming, nor is there any evidence that cuttings had been made of it before Lord Talbot's untimely death in the spring of 1973."

To the contrary, not only was a description published, but cuttings were distributed by Lord Talbot. The description appeared in W.J. Bean's *Trees and Shrubs Hardy in the British Isles* in 1973: "*G. elliptica* x *fremontii*...A selection...named 'Pat Ballard' received an A.M. when shown by Lord Talbot in February 1971. The leaves resemble those of *G. elliptica* in shape but are greener and the margins less undulate, as in *G. fremontii* the undersurface is glabrous except for a few long straight appressed hairs. The named plant is male with catkins 5 - 6¾ in. long" (12). Although the history of the cultivar given in this volume is confused and erroneous, this is a valid description of it and the name 'Pat Ballard' is validly published there. Specimens of the cultivar collected in 1969 and 1971 were deposited by Lord Talbot in the herbarium of the Royal Horticultural Society, Wisley (WSY).

As far as cuttings are concerned, *Garrya* 'Pat Ballard' was offered by Hillier and Sons of Winchester, England, in their Autumn 1975-Spring 1976 *Price List of Trees and Shrubs,* as *"Garrya elliptica* [sic] 'Pat Ballard' " (13). Hilliers, in fact, received seed of the hybrid in September 1962 from the University of Washington Arboretum, but there is no record of any seedlings being raised. Lord Talbot gave cuttings of 'Pat Ballard' to H.G. Hillier and there are three plants growing in the Hillier Arboretum at Ampfield, Hampshire.

At least one description of 'Pat Ballard' refers to "grey and orange" tassels, or male catkins (9). The catkins begin by being dark; from a distance they seem almost purple, due to the combination of the deep red band at the base of each involucre and the clear green involucre tips. As the catkins elongate, the green and red bands lighten in colour, and when fully mature, the catkins have a light golden colour, but certainly not orange. On close inspection, the bands of red and green can be distinguished, separated by pale cream male flowers, by this time clearly emerged beyond the involucre. The catkins of *Garrya elliptica* are dull grey, due to the dense hair covering on the involucres. The

Garrya x _issaquahensis_ hedge at Malahide Castle. 'Pat Ballard' is in the center of the photo.

Photo: courtesy E.C. Nelson

silky hairs obscure the green and red bands. In *G. elliptica* the male flowers are not as cream in colour as in *G.* x *issaquahensis*.

Garrya x *issaquahensis* at Malahide Castle, 1980.

The hedge originally planted by Lord Talbot thrives at Malahide Castle, which is now owned by the Dublin County Council. The original plant of 'Pat Ballard' is over four metres in height and in February 1980 was covered with blossom. All the plants were unaffected by the very severe winter of 1978-79, when record minimum temperatures were recorded throughout Ireland; on January 2, 1979 the minimum temperature in the National Botanic Gardens, Glasnevin, about 15 km southwest of Malahide Castle, was -12.4 °C and at Kinsealy Research Centre was -8.4 °C.

Cuttings from the original plant of 'Pat Ballard' have been taken by the National Botanic Gardens and by the Kinsealy Research Centre, a horticultural research station near Malahide. At Glasnevin there are also young plants grown from cuttings of other plants in the group. It is intended to study the males in the group to ascertain if other selections should be made; for example one plant appears to have brilliant maroon stems. However, Lord Talbot noted that there is very little difference between the males, and the females are not spectacular. Lord Talbot recorded that another horticulturist preferred a certain male in the group which he himself "thought not so good as another which had been at its best about a week before" (2). The plants do vary in their time of flowering, or rather, the period when the male catkins are at their most attractive is slightly different in each plant.

One further point about the Malahide plants is that viable seed is set. No seed was set in 1979, probably due to the severe weather at flowering time, but F_2 seedlings have been raised at Glasnevin from seed collected in 1977 (acc. no. 77.1479). Lord Talbot removed all plants of *G. elliptica* from the walled garden, leaving only the group of hybrids, so that this seed must have resulted from cross-pollination of female *G.* x *issaquahensis* by the nearby prolific males. Lord Talbot distributed seed of the F_2 generation to several arboreta and botanic gardens, but despite requests for information on their fate, no seedlings have been traced. The several institutes and a few individuals who did reply indicated that they had had no germination or could not trace the seed.

Garrya x *issaquahensis* at the University of Washington Arboretum, Seattle.

From the seed received from Mrs. Pat Ballard in 1961 (acc. no. 379-61) only one plant, a male, was raised to planting size. This was placed on a bank beside Arboretum Drive East, near its southern terminus, and flowered in 1968. It is still growing in the Arboretum today.

In 1962, Carl English, Jr. of Seattle gave the Arboretum cuttings of male and female plants of the hybrid he had artificially produced. Some of these cuttings rooted and the first were planted out in April 1963. Others were grown on in a lath house and planted in three different locations in the Arboretum in November 1964, October 1965 and March 1966. Altogether six plants of the male (acc. no. 41-62) and two of the female (acc. no. 42-62) clones were planted, and these flowered for the first time in 1968, the same year as Mrs. Ballard's seedling. These also survive today in the Arboretum. The male plants have rich maroon branchlets, the female olive-brown. As at Malahide Castle, these plants were untouched by severe frost and cold weather; in December 1968 and January 1969, a minimum temperature of -14 °C was registered, and for eight days the thermometer did not rise above freezing point.

In January 1979, in the company of Michael Fleming, now in charge of the plantings and their maintenance, one of us (B.O.M.) visited the grounds of the H.M. Chittenden Locks, Seattle, and found a row of *Garrya* plants just inside the steel fence on the west side of the main entrance. The first plant, nearest the gate, and the last one at the west end, are obviously old specimens of *G. elliptica,* three to four metres in height. Between them are 25 distinctly younger plants of smaller size. Samples of these were

taken and sent to the National Botanic Gardens, Dublin, for examination. Some of these approached *G. elliptica* in their leaf characters, although none was identical to that species. No plants of *G. fremontii* were seen anywhere in the Locks grounds at that time, although the species is included in the list of plants growing at the Locks which was published in 1976 (14). At the time of the visit the female catkins were more advanced than the male, showing the styles protruding from the bracts. At Malahide Castle, both male and female flowers appear to reach maturity about the same time.

The samples studied in Dublin do not match the *Garrya* x *issaquahensis* plants at Malahide Castle, nor do they match *G. elliptica.* At present, without information on their origin, it can only be suggested that they are F_2 seedlings, or backcross seedlings raised from *G.* x *issaquahensis* plants pollinated by *G. elliptica* or the reverse[4]. In various characters these plants are intermediate between *G.* x *issaquahensis* and *G. elliptica* — for example, in the degree of undulation of the leaf margins and in the hairiness of the involucre bracts. However, it has to be stressed that hybrid seedlings raised from different parents aré unlikely to be identical, and it must be remembered that Mrs. Ballard's chance cross was the reverse of that made by Mr. English. Mr. English's male clone (41-62) donated to the University Arboretum does match the plants raised at the Arboretum (379-61) and at Malahide Castle, and this adds weight to the idea that the young plants at the Locks gardens are either F_2 seedlings or backcrosses.

Conclusion

Garrya x *issaquahensis* 'Pat Ballard' is a lovely plant, well suited to gardens in the western USA and in the British Isles. It is hoped that it will become more widely available in the future, and that this cultivar, uniquely recording in its history a link between Ireland and America, will delight gardeners in both countries.

ACKNOWLEDGMENTS

We are both grateful for the assistance given by the University of Washington Arboretum, Dublin County Council, and the Royal Horticultural Society. Chris Brickell, Joe Witt and Denis Shannon are especially thanked. We are also grateful to Dr. Keith Lamb, Kinsealy Research Centre, Dublin and V. Parry, former librarian at the Royal Botanic Gardens, Kew, for information on and access to the records of Malahide Castle. Our thanks are also due to the curators of the herbaria at Kew, Rancho Santa Ana, University of California (Berkeley), University of Washington (Seattle) and Wisley for the loan of specimens.

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2 in litt., Talbot de Malahide to C.D. Brickell, 20. iii. 1969 (for this and other material, we are grateful to Mr. Brickell, Royal Horticultural Society, Wisley, England).

3 Phillips, J.W. 1971. Washington State Place Names. Univ. of Washington, Seattle.

4 Entry form dated 4 February 1969 (see reference 2).

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6 in litt., Talbot de Malahide to C.D. Brickell, 26. iii. 1969.

7 Entry form dated 2 February 1971 (see reference 2).

8 Notes from the shows. 1969. Journ. Roy. Hort. Soc. 94:169-171.

9 Notes from the shows. 1971. Journ. Roy. Hort. Soc. 96:174-176.

10 Ballard, N. 1978. The saga of some hybrid seed: *Garrya fremontii* x *G. elliptica*. UW Arb. Bull. 41:29-31.

11 ms. in Library, Royal Botanic Gardens, Kew. p. 146 (1971-1972).

12 Bean, W.J. 1973. Trees and shrubs hardy in the British Isles. Vol. 2 (D-M), p. 248. 8th Edition (Ed., G. Taylor). John Murray, London.

13 Hilliers' latest *Price List* (Autumn 1979-Spring 1980) also includes *Garrya* 'Pat Ballard'.

14 Carl S. English, Jr. Gardens at the Hiram M. Chittenden Locks, Lake Washington Ship Canal, Seattle, Washington. August 1976. US Army Corps of Engineers, Seattle District.

[4]The F_2 seedlings raised at the National Botanic Gardens, Glasnevin, in 1977, were examined recently, and they showed the same range of characters as these Locks plants. It seems more likely (the point being the curiosity value of seeds from a hybrid) that Mr. English collected seeds from female *G.* x *issaquahensis* (pollinated by male hybrids of *G. elliptica*) than from *G. elliptica* females (pollinated by *G.* x *issaquahensis*). The similarities between the Glasnevin F_2 plants and the Locks plants suggests that the Locks plants are also F_2 seedlings. As far as we know, the backcross has not been deliberately made yet.

Flowers of *Cytisus scoparius* f. *sulphureus* 'Kirkland' blooming in May. Photo: Brian O. Mulligan

A New Form of Scotch Broom

BRIAN O. MULLIGAN

In May 1951 we noticed a single plant of the common or Scotch broom *(Cytisus scoparius)* flowering at the side of a residential street in Kirkland, Washington. Instead of the usual golden yellow flowers of the type, this plant was covered with pale yellow blossoms, very different from the norm in hue.

So in July that year we returned to the site and collected some suitable young shoots from the plant, taking them to the Arboretum where some were successfully rooted by the propagator at that time, Lawrence Michaud.

According to the Arboretum records, one was planted out in June 1952, at the south end of the Leguminosae area beside the Upper Road, now Arboretum Drive East. It flowered the following May and again in the next two years. A note by Mr. Witt on the file card states: "Good light yellow with stronger yellow stripes around edge and midrib of standard. Very good." Then in a later note of November 1956: "This plant survived the freeze of November 1955 but was damaged rather badly." Cuttings must have been taken from it previously, since another was planted in August 1964 near the Madison Street entrance to the Arboretum, though it was no longer to be found there in February 1970. However in May 1971 four more plants were set out in a bed of various *Cytisus* specimens close to Arboretum Drive East. These were observed in full bloom in May 1974; since that date they have all died out.

Since this form has some garden value for its growth habit as well as for its flower color, and since it has been maintained in cultivation for nearly thirty years by vegetative propagation—in our own garden as well as at the Arboretum—the name 'Kirkland' was published for it in *Woody Plants of the University of Washington Arboretum* (May 1977), as a new cultivar of *Cytisus scoparius* (L.) Link forma *sulphureus* (Goldring) Rehder. The epithet *sulphureus* was first properly applied to this form by William Goldring in 1901, and is available for this seedling.

In that voluminous and most comprehensive work, *Arboretum et Fruticetum Britannicum,* Volume II, page 595 (1838), Mr. John C. Loudon remarks of the common broom: "The flowers are of a deep golden yellow, sometimes tinged with orange, and occasionally of a uniform pale lemon colour . . ." So this form was known at least before that date and no doubt somewhat earlier. On page 597 he also notes: " . . . at New York, where it is called Scotch broom, plants are 37½ cents each."

Propagation by cuttings is not difficult, either under mist when cuttings are still soft in late June into July, or as late as February in a cool greenhouse or outdoor cutting frame. Seedlings have not been raised from this plant, but it is unlikely that they would come 100 percent true to its flower color.

Description

Shrub growing to 7 or 8 feet in height, the main stem upright but lateral branches having a tendency to droop (semi-pendulous). Leaves similar to those of the species, both trifoliate and simple. Flowers very freely produced in May, usually solitary but occasionally paired, on slender glabrous pedicels; corolla about 3 cm long, primrose yellow on the keel (RHS Color Chart, 1966, Yellow Group 3C) but slightly deeper in hue on the back of the standard and on the wings (Yellow Group 3B); the general effect is between primrose and lemon yellow. In *Cytisus scoparius* the back of the standard and exterior of wings are Yellow Group 13A-B, the inner face of the standard Yellow Group 12B, and the keel Yellow Group 6B.

The most evident differences in flower color between the type species and 'Kirkland' are the egg-yolk coloring of the wings of the former and the deeper yellow hue of its standard which is marked by 8 to 10 fine orange honey guides at its base. In 'Kirkland' the pale yellow color is uniform throughout except for the slightly paler keel; the honey guides are light brown, extremely fine and inconspicuous.

Flowering specimens have been or will be deposited in the herbaria of the University of Washington, the University of California at Berkeley and the Arnold Arboretum, Jamaica Plain, Massachusetts. This form will also be registered as a new cultivar with the last-named institution.

Notes and Comment

The NOHS Annual Fall Plant Sale will take place in the lower parking lot of the Museum of History and Industry. Dates are: Friday, October 3, 10 AM-6 PM; Saturday, October 4, 10 AM-3 PM.

Errata: In the Spring 1980 issue of the *Bulletin* (Vol. 43, No. 1), four errors appeared in the Index: p. 39, under "Arboreta and Gardens" change "Hiller" to "Hillier"; pg. 40, change *"Euycalyptus"* to *"Eucalyptus"* and directly beneath change "mimcry" to "mimicry"; under *"Mahonia",* "x 'Arthur Menzies' " should have been single-indented. In the Summer 1980 issue (Vol. 43, No. 2, p. 17, 13th line from the top), *"Rosa moschata"* was misspelled.

Status of the UW Drug Plant Garden

We should put to rights the rumors circulating about the fate of the University of Washington Drug Plant Garden. It is *not* defunct, nor is it being abandoned. What has happened is sad enough. The Unversity has been forced to cut the position of Mr. Gerard Vreeburg. This leaves the garden with no full-time bontanist-gardener. Mr. Vreeburg has been relocated to the Grounds staff of the University. Since the Department of Botany has assumed responsibility for the Drug Plant Garden for over a year, Botany has responded to the emergency by providing bare maintenance help for the garden under the supervision of Mr. James Nishitani. Botany will make a serious effort to have the Vreeburg position reinstated. Assistance outside the University would be most welcome. The Drug Plant Garden should continue to serve the campus and the general public as a unique collection of traditional herb plants and as an outstanding Seattle amenity. *ARTHUR R. KRUCKEBERG*

Garden Vignettes

Editor's note: We promised in the last issue that we would try once more to publish notes by gardeners on subjects of interest to gardeners. In the following paragraphs, Rosamond Engle, a long-standing member of the Editorial Board, has come through with a history of her garden and the mistakes that were made before it was brought to a stage that was satisfying to her and, moreover, easy to maintain.

We welcome your notes, your paragraphs, and your short articles on this or any theme that is of potential concern to gardeners.

The Romans had an apt, significant phrase, "Caveat emptor". Freely translated this means, "Let the buyer beware". In the Northwest the gardener has a large and very attractive field of plant material to choose from. If his experience is substantially unbridled, the choices he makes initially can be devastating. Perhaps no field is so full of errors and pitfalls as landscaping a home garden. As we have all discovered, a garden can be a thing of beauty or a hodgepodge of unrelated trees and shrubs. In a fine primer on plants John Grant, the author of *Trees and Shrubs for Pacific Northwest Gardens,* writes, "You must be familiar with plant material to understand how it should be used in garden design . . . So why buy plant material knowing little or nothing about its future behavior or the rules for its culture?" This states succinctly a cardinal rule in planning a garden: know the plants that will become the backbone of yours in the future. Gardens are in a perpetual state of flux, a bud today and a blossom tomorrow, never static. Many amateurs have found to their discomfiture that poorly chosen plants soon become a thorn in the side. With no settled design in mind, tall evergreens or shrubs that soon "take over" can become a liability.

Your future garden will be affected by your concepts of how much space can be allowed each plant. What has seemed to be a very large area will soon become dwarfed with overplanting. Your garden will lack balance and harmony unless space is considered. In his book *Patterns of Nature,* Peter Stevens writes, "Every form, every pattern, every existing thing pays a price for its existence by conforming to the structural dictates of space." A good conceptual plan will take this important factor into consideration. Given proper pruning your plants will respond in graceful development and growth.

Our 40-year-old city garden has gone through three phases. Our first error was in choosing shrubs and plants potentially too large for their allotted space. The Big Freeze of 1955 did away with much of this indiscretion. Next was the "Yew Stage". Wishing to fill in quickly where shrubs had been frozen, we chose two large Irish yews, *Taxus baccata* 'Fastigiata', stiff and columnar, for either side of the entrance. Besides the fact that I did not know this variety could grow to a height of 50 feet, they were a dark and gloomy color. Junipers in the planting were so funereal that we gave them away. The final phase has been with us now some 20 years. Two large pin oaks, *Quercus palustris,* preside over our privacy. The balance of the planting is in broad-leaved evergreen shrubs. With some pruning, the garden will remain within decent bounds for a long time. So to the young and avid gardener, let us suggest that no more buying forays be indulged in. You may like rhododendrons enormously but let them have priority and not a monopoly.

ROSAMOND P. ENGLE

Bulbs can fit anywhere — even in an overcrowed garden.
Buy yours at the

10TH ANNUAL ARBORETUM FOUNDATION FALL BULB SALE

Wednesday and Thursday, October 1 and 2
from 10 to 4 — parking lot of the Arboretum offices.

President's Message

Where are we going?

A number of those objectives which the Foundation has been working toward for many years are now either an accomplished fact or on the way to completion shortly. Dr. Harold B. Tukey, Jr. has been selected as Director of Arboreta; the construction of the Japanese Tea House is under contract; the Visitor Center is proceeding (we are currently in negotiations with the Seattle Park Department for an agreement covering the visitor-center construction).

With the above objectives behind us, what direction should we take in the future? It was this dilemma that triggered the idea of organizing a planning session in order to explore the next five years of the Arboretum's activities as well as those of the Arboretum Foundation. The program was organized by the officers and directors of the Arboretum Foundation and was held on July 23, 1980. This was an all-day session starting at 9:30 AM and finishing shortly after 4 PM. Our outside resources were: Dr. Harold Tukey, outlining his academic Urban Horticultural Program as he sees it developing over the next five years; Joe Witt, identifying the Plant Curator's view of the Arboretum during that time; Bud Stritch, Assistant Superintendent of Seattle Parks, identifying the City of Seattle's view of the Arboretum in those years; and Pat Parks, attorney, reviewing the limitations on political activities for a 501-C3 tax exempt corporation, which is our IRS category.

In addition to the outside resources, Elizabeth Moses and Nancy Davidson Short reviewed the public's image of the Arboretum; Sue Peterson discussed the operation of the Visitor Center after it is built; Jeanne Gardiner gave us broad ideas on how to expand membership; John Robinson discussed financing after the Visitor Center is built; John Putnam presented a document identifying the criteria for sponsoring education; and Nancy Hewitt discussed the role of the Board of Directors.

The audience consisted of approximately 60 people. They actively participated in the discussion on each subject and their questions to the resources were direct and to the point. In addition, many ideas come from their statements.

The officers and directors will be reviewing the suggestions and ideas developed at this meeting in the coming months, and I feel we will be able to utilize the information gathered to more intelligently plan for the future.

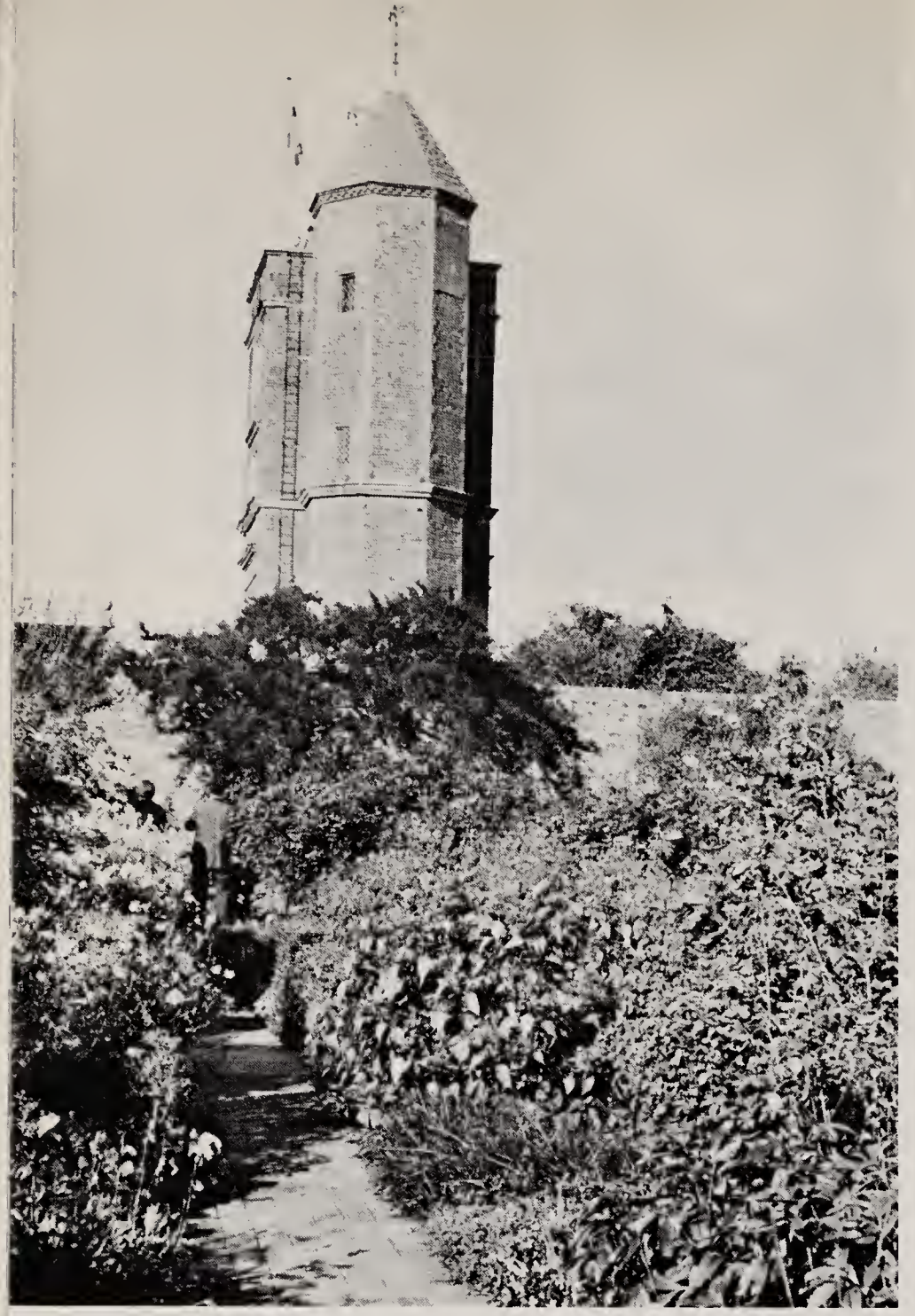
One major need that was identified is to find some means of raising the level of maintenance dollars for the Arboretum. A recent cut of almost $39,000 from the University's budget exemplifies the problem; however, the solution must be to raise substantially the level of funding. These funds come from the University of Washington's budget and the City of Seattle's budget. How we can organize ourselves to help solve the problem of declining maintenance dollars for the Arboretum certainly will be high on our list of priorities for the future.

It is exciting to contemplate a brand new, academic-level Urban Horticultural Program from its inception. We will be looking for guidance from Dr. Harold Tukey as to how we can augment and help with the implementation of his ideas as this new program is staffed and developed over the next five years.

DONALD W. CLOSE

The Unit Council's 1980-81 Workshops and Classes

The Education Committee of the Arboretum Foundation Unit Council is offering three program series this year. In October, the subject will be COLLECTING AND PROPAGATING PLANTS FROM SEED (see page 42 for details). On the four Wednesdays in February, Richard van Klaveren, Arboretum Propagator, will repeat his popular course on GREENHOUSE MANAGEMENT; class size 17, fee $18. On April 1st and 8th, Jody Logan and Lee Clarke will offer a PERENNIAL WORKSHOP; class size 15, fee $5. Call 325-4510 for reservations.



The Tower at Sissinghurst. Photo: Brian O. Mulligan.

Sissinghurst: The Garden and its Creators

*PAT PENFIELD**

Among the many fine private and public gardens in Britain, Sissinghurst Castle Garden stands out as a unique and special gem. A visit to Sissinghurst takes one through the rural countryside southeast of London to the County of Kent. Kent: county of pears and apples and strawberries, of hazelnuts and hops — a garden county in a garden isle.

Preludes

Here, in the 1930's, Sissinghurst was born, its dwellings restored from an old castle of four physically separate buildings that languished in decrepitude. These old buildings and their remaining walls had in times past incarcerated French prisoners and seen the comings and goings of many generations. Now, they would provide the physical framework — once restored — for the home and garden experiment of writer Vita Sackville-West and her diplomat-writer husband, Harold Nicolson. And what a restoration was involved! Son Nigel Nicolson remembers vividly:

> It was the battered relic of an Elizabethan house in which not a single room was habitable. The future garden was a rubbish dump. The day was a wet one, and I trailed my mother between mountains of old tins and other unexplained humps from one brick fragment to another, each more derelict than the last. She suddenly turned to me, her mind made up: "I think we shall be very happy here." "But we haven't got to live here?" I said, appalled. "Yes, I think we can make something rather lovely out of it" (1, pp. 138-9).[1]

Here among the rubble and the fragments, Vita and Harold created a garden of the most striking character. What they wanted was a garden informal in its plantings, but formal in structure, a garden of obvious vistas and secret, surprising cloisters.

*Pat Penfield is well known for her popular Arboretum courses sponsored by the UW College of Forest Resources. During the year 1978-79, when she and her husband were living in England, she visited Sissinghurst several times to study the design and plantings. It is a source of regret to her colleagues that the Penfields have recently moved to the East Coast, but we are grateful for this delightful article and for the promise of others to come.

[1]Numbers in parentheses refer to numbered references at the end of the article.

Designer Harold achieved the formality with straight lines, rectangles and squares, with an occasional curved and crescent-shaped hedge to break the monotony of right angles.

As counterpoint to Harold's formal setting, Vita created an informal, yet controlled and verdant cornucopia: climbers (roses, figs, clematis, honeysuckle, wisteria) twining in and out of evergreens and over walls; pools of plants of complementing, often subtle, colors; bold sweeps of foliage and flowers; scents on the quiet air; the old, familiar cottage species hob-nobbing with much rarer ones; plants at eye level in urns and on stone seats; a garden of sanctuaries, each with a unique theme of color or concept, and a concentration of bloom time.

Garden as Sanctuary

While much of what Vita and Harold desired in a garden was achieved, many of Harold's intended vistas have been obscured by the insistence of the sense of cloister and surprise. For to enter this small garden of a few acres is to leave the outside world for a series of unique and intimate garden sanctuaries. Each cloister is surrounded by walls of brick and of hedges that concentrate the attention on the plantings at the same time that they protect them from the wind and cold and allow them surfaces on which to climb. Plantings within each cloister are grouped with striking effect, climbing, twining, or spilling gracefully to create a sense of opulence and profusion. As example: toward the south upon entering the Tower Courtyard at springtime is a breathtaking grouping of deep blue *Ceanothus impressus* juxtaposed to the red of *Rosa moyesii* and the white *Viburnum plicatum* 'Mariesii', all skirted round with a multicolored foreground of aquilegias, and backed with the red brick wall on which climbs a soft pink clematis. This is merely the beginning of a series of explorations and discoveries, as each cloister unfolds its special qualities.

Thematic Gardens

Vita designed each cloister with a theme. In the White Garden, a number of foliage and flowering plants in hues of grey and white

Leaded window with *Ceanothus papillosus* var. *roweanus*. Photo: Pat Penfield

and green blend in soothing and subtle harmonies. Planted for their blossoms are white-flowered aquilegias, *Iris* x *germanica* var. *florentina,* the large, white-flowered *Paeonia suffruticosa* with its lemon-yellow stamens and mauve-suffused interior, and the white spikes of the liliaceous *Eremurus himalaicus*. There is an amazing range of foliage plants: the prickles of *Onopordum;* the mottled lungworts and the bold parallel-veined hostas; silvery wormwoods and grey-downy *Cineraria maritima* (now *Senecio cineraria).* Several of these beds and pools of plants are set off against the deep green of box hedges, kept clipped and low-growing to avoid obscuring the rest.

The west side of the White Garden is dominated by the greyed foliage of a willow-leaved pear, *Pyrus salicifolia* 'Pendula', under which stands sculptor Rosandic's lithe, lead statue of a virgin, likely more obvious when the tree is without foliage.

A second dominant focal point is the deliciously scented, single climbing rose, *Rosa longicuspis,* which covers a centrally located metal trellis. Still another rose, 'Madame Alfred Carriere', clothes the east wall of the brick building known as the Priest's House. The size of this climber is a

Tower Courtyard with *Ceanothus papillosus* var. *roweanus* and *Rosa* 'Alan Chandler'. Photo: Pat Penfield

Rosa 'Fruhlingsgold' near the Cottage.Photo: Pat Penfield

reminder that the White Garden was once the site of the now-moved Rose Garden. Vita and Harold, but especially Vita, were always experimenting. They viewed garden-making as a dynamic process, a series of trials and explorations in which they often moved plants other than the firmly fixed basic foundation plantings. Their art of gardening might be likened to that of a painter who, learning from the mistakes and successes of the past, repaints and reinvigorates a canvas year by year with increasing subtlety and sophistication of vision.

Splashing and spilling over stone pavings, the oranges, reds and yellows of the Cottage Garden are as vivid and overt as those of the White Garden are subdued and subtle. Here, the soft yellow rose, 'Madame Alfred Carriere', climbs nearly to the top of the south Cottage wall, complementing the lemon-yellow rose, 'Lawrence Johnston', on the west corner.

Four central Irish yews *(Taxus baccata)* provide a contrasting darker color and height as foil to the beds of *Potentilla fruticosa* 'Tangerine', the red wallflowers *(Cheiranthus),* orange *Euphorbia griffithii* 'Fireglow', deep yellow *Achillea filipendulina,* and light yellow *Paeonia mlokosewitschii,* to name only a few. Complementing this floral color scheme are a number of encircling shrubs with yellow-green foliage, including *Elaeagnus pungens 'Maculata',* and the St. John's Wort *(Hypericum inodorum [elatum]* 'Elstead').

A garden of old-fashioned roses boasts hundreds of species and varieties that provide a panoply of color and scent. Its peak of bloom is June. A formal element of structure central to the Rose Garden is the Rondel — a circle of dark, clipped yew hedges broken at ninety-degree intervals by perpendicular walkways. Around the Rondel in beds and on the walls is the very fine collection of roses. Here are shrub roses in beds grouped for harmony of color and habit: hybrid musks, bourbons and gallicas, rugosas, damasks and cabbages. There are, as well, species roses like the dark pink *Rosa californica* 'Plena', a small number of floribundas, hybrid teas and climbers. Author Anne Scott-James captures something of the June essence of the Rose Garden when she writes:

> The compact gallicas ['Rosa Mundi', 'Cardinal de Richelieu', 'Crimson Tuscany'] are backed by spraying hybrid musks ['Buff Beauty', 'Cornelia', 'Vanity', 'Pax'], the dense rugosas with their distinctive thick, wrinkled leaves are grouped together . . . There are rugosas like Vita's favorite 'Blanc Double de Coubert'[2], Roseraie de l'Hay' and *R. rugosa alba.* There are hybrid perpetuals like 'Ulrich Brunner', 'Roger Lambelin' and

[2]Editor's note: Single quotation marks have been added in accordance with accepted usage.

A corner of the Tower Courtyard from the Tower. Photo: Pat Penfield

The chamomile-covered seat.

'Souverin du Docteur Jamain', with flowers of so dark a red they are almost black. This is the rose which Vita found in an old nursery and restored to cultivation (2, pp. 137-9).

As if this wealth of color, form and scent were not sufficient, the beds of shrub roses are garlanded with underplantings of *Dictamnus,* pools of bearded irises, lavenders, *Lychnis,* delphiniums, sweet williams, and the very showy deep lilac umbels of the onion, *Allium christophii (albopilosum).* And on the walls with the climing roses are figs and honeysuckles, clematis and vines, and two wild lilacs, *Ceanothus impressus* and *C. dentatus.*

From the Cottage Garden, a sweep of lawn leads eastward to a poplar-lined moat and the Herb Garden. The entire south bank above this lawn is fragrant in May and brilliant with an interplanting of orange- and yellow-hued *Mollis* azaleas. Once again, as in many of the cloisters, these azaleas are underskirted, this time with bold, bright green rodgersias.

The presence of an herb garden is announced by a rectangular bed of multicolored rose- and purple-hued creeping thyme *(Thymus serpyllum).* Inside, the lovely opium poppy *(Papaver somniferum),* backed by the foxglove *(Digitalis purpurea)* vie for attention with the culinary herbs, and a number of special sages (for example, *Salvia turkestanica).* A stone seat covered with chamomile *(Chamaemelum nobile [Anthemis nobilis]),* is a relict of an earlier garden fashion before the invention of the lawn mower, when herbs like the thymes and

North wall of the Rose Garden with *Rosa californica* 'Plena' (left) and *R. floribunda* 'News' (right).
Photo: Pat Penfield

chamomiles provided fragrant lawns and ground covers for many English gardens. Here in the Herb Garden we encounter once again Vita's fondness for displaying plants at eye level through the vehicle of the stone seat and a center-stage urn-planted grouping of sempervivums.

There is so much to see at Sissinghurst — such a compactness of plantings, so many new plants to encounter in such specially displayed ways — that neither the written word nor the camera is capable of capturing the sense of excitement and wonder generated by experiencing this garden.

While walking around the garden, one is struck by the contrast between the horizontal compactness of the thematic cloisters and the vertical sense of freedom to be had by climbing the centrally located Tower. From the Tower's top, one looks out over the whole of Sissinghurst and the surrounding countryside. By the presence of this one vertical artifact complementing the cloistered gardens, Sissinghurst thus satisfies the impulses toward both expansiveness and sanc-

Photo: Pat Penfield

The southwest corner of the Tower Lawn. **Photo: Pat Penfield**

Hedges, evergreen shrubs and roses against the front wall of Sissinghurst with the typical planted urns in the foreground. Photo: Pat Penfield

tuary. On a fine blue-skied, billow-clouded spring day, the view is spectacular.

Garden as Personal Vision

A lower chamber of this Tower was Vita's study. Each member of the Sackville-West/Nicolson family had a separate personal space: Vita the Tower; Harold the Cottage; the sons each a piece of his own turf. These provided places for the solitude and self-exploration that Vita and Harold required to concentrate on their writings. Yet the family could come together for meals and other communal gatherings.

This unusual use of shelter exemplified the singular independence of Vita's and Harold's life-style. Their marriage — unconventional and courageous — was a unique one in which each granted the other all the independence of spirit and behavior that either could wish. Yet coupled with this freedom was the deepest mutual sensitivity and supportiveness. Son Nigel recounts (1) how their marriage weathered the love of each for others, and an early crisis of major proportions when Vita nearly abandoned Harold for childhood friend Violet Kapel. Yet through this early travail and the succeeding years, the love of Vita and Harold grew in depth and significance. Sissinghurst was one of the creative products of that deep mutual understanding and love. The garden is all the more remarkable an achievement when we remember that, for both Vita and Harold, garden-making was an avocation that took second place to their professional work.

While gardens come to have lives of their own, we sometimes forget that they are, after all, the creation of individuals. Vita's stamp is especially strong upon this garden, whose creative plantings and effects result from her previous experience and personal vison:

— A deep sense of place, of the importance of having roots in the land, as exemplified in her poems, "The Land" and "The Garden".
— The experience gained in two previous gardens, one in Persia, one in England.
— The recognition of garden as psychological nourishment.
— An eye for effective plant groupings.
— A considerable and ever-increasing knowledge of new, and (at the time) rare exotic herbaceous perennials and shrubs, as well as of the more widely known species.

Vita's and Harold's achievement is kept alive today by a staff of gardeners headed by two women who worked with her before her death, and by the National Trust dedicated to the preservation of the precious resource that is Sissinghurst.

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More UW Campus Trees—II

C. FRANK BROCKMAN

This is Mr. Brockman's final article in a series about trees of the UW campus. Readers are referred to the preceding four issues of the Arboretum Bulletin *for "Some Notable Campus Trees", "University of Washington Campus Conifers", "The UW Campus in Bloom" and "More Campus Trees".*

Once more, we remind those who would like to tour the plantings on campus that maps are available at the entrances and that one was published in the Winter 1979 issue of the Arboretum Bulletin *(Vol. 42, No. 4, pp. 22-25).*

Some of the material in this and previous articles has also appeared in a UW publication called "The U is for you: Let's tour the trees on UW campus", edited by Louise M. Hastie, Manager of Information Services. Additional copies of that article, which was arranged as a guide to campus rather than by genus and species, may be obtained by calling Ms. Hastie at (206) 543-2580, or writing to her at 450 Administration, University of Washington, AI-10, Seattle, WA 98195

Fagus (Fagaceae)

Beeches are notable in winter for their handsome, gray bark and long, slender leaf-buds. The leaves are elliptical with prominent veins, which have tufts of hairs in their axils. The staminate flowers appear in long-stemmed clusters when the leaves are developing. The nuts are triangular, in husks covered with weak, unbranched spines. These may become ultimately very large trees that cast dense shade.

Fagus grandifolia, American beech.

The American beech is an important member of the hardwood forests of the eastern United States and southeastern Canada.

Characters: The two- to four-inch leaves have 11 to 15 pairs of veins and margins with pointed, incurved teeth.

Location: A specimen grows near the northwest corner of the Music Building.

Fagus sylvatica, European beech.

This native of central and southern Europe is widely planted in the United States.

Characters: The leaves differ from those of the American beech in having fewer veins (five to nine pairs) and noticeably hairy leaf margins with small, rounded, marginal teeth.

Location: Specimens grow on the southwest corner of Anderson Hall and on Campus Parkway.

Fagus sylvatica 'Purpurea', copper or purple beech.

The copper beeches are among the more handsome of campus trees. They differ from the type (above) in the coppery to purplish tinge of their leaves.

Location: Noteworthy specimens grow near the stairway of the Art Building and northwest of Anderson Hall.

Gleditsia triacanthos, honey locust (Leguminosae).

The honey locust is so called because its foliage resembles that of the locust, *Robinia.* It is native to eastern United States, west to South Dakota and south to Texas and Florida.

Although the honey locust is notorious for its vicious thorns, there are a number of thornless varieties in the nursery trade including 'Inermis'. Most of the specimens on campus are thornless.

Characters: The pinnately to bi-pinnately compound leaves are seven to eight inches long, with leaflets up to two inches long having smooth margins (those on bi-pinnate leaves are smaller). The inconspicuous, greenish-white flowers are small in elongate

Branch of *Juglans nigra* with staminate catkins.
Photo: C.F. Brockman

clusters. Dark reddish-brown, twisted, flattened, strap-like pods 7 to 18 inches long contain seeds embedded in pulp. Branches, often portions of the trunk, have woody, sharp, simple to three-branched spines up to three inches long.

Location: They grow in the grove along the Burke-Gilman Trail southwest of Bloedel Hall, in the grassy area between Johnson Hall and Stevens Way, and on both sides of Montlake Boulevard north of the Montlake Bridge.

Ilex aquifolium, English holly (Aquifoliaceae).

This dioecious native of Europe and western Asia has many forms, differing especially in size, shape and color of leaves.

Characters: The evergreen leaves are typically two to four inches long, with sharply pointed apex and large, widely spaced, spiny marginal teeth (occasionally spineless on large trees). Staminate and pistillate flowers are small and greenish-white. Bright red berry-like ¼-inch fruits are borne on pistillate trees.

Location: Typical specimens flank the north entrance to the Art Building.[1]

Juglans nigra, black walnut (Juglandaceae).

Native to eastern United States, from New York to Florida, west to South Dakota, Oklahoma and east Texas, this species may reach 100 feet in maturity.

Characters: The leaves are odd-pinnately compound, to 24 inches long, with 15 to 23 leaflets; the largest of these pairs is near the center of the leaf stalk. The staminate flowers are borne in unbranched catkins. Rough-shelled nuts are enclosed in a leathery, yellowish-green husk that does not split open when mature. The distinctive chambered pith is exposed when a twig is split lengthwise.

Location: The largest specimens on campus grow east of Denny Hall and near Parrington Annex.

Liquidambar styraciflua, sweet gum or red gum (Hamamelidaceae).

Sweet gum is a forest tree in the eastern United States, thriving in moist, even swampy ground. When planted in the Pacific Northwest, it is one of the few trees we can rely on for fall color. Although the leaves resemble maple leaves, they are alternate on the branches rather than opposite as in all maples.

Characters: The star-shaped leaves are five to seven inches long with five to seven pointed lobes and toothed margins. In autumn, the foliage turns a variety of striking colors on the same tree. The seeds are contained in woody capsules formed into burr-like, globular one-inch heads, attached to slender stems. The twigs have characteristic corky wings.

Location: Liquidambar may be seen between the Art Building and MacKenzie Hall, southwest of Drama-TV, in the rear of the Health Sciences Building, and on Campus Parkway.

Nothofagus dombeyi, one of the false, or southern, beeches (Fagaceae).

This native of Chile and Argentina is a giant forest tree in its natural habitat. It was introduced to the Northwest by the Arboretum in 1950.

Characters: The glossy evergreen leaves are narrowly elliptical, one to two inches long, with small dark spots. The margins are coarsely toothed. The small nuts are produced in husks about one-half inch long.

Location: A graceful specimen is planted in the lower level of Meany Hall near the west end of the Administration Building.

[1]The article, "Some Notable Campus Trees" *(Arboretum Bulletin,* Fall 1979, Vol. 42, No. 3, pp. 15-21) described the historical interest of a number of trees on campus. This footnote is referred to throughout the text of the present article.

Platanus x *hybrida (acerifolia),* London plane (Platanaceae).

London plane is a hybrid between the eastern American *Platanus occidentalis* and the southeastern European *P. orientalis*. The plants on campus resemble the foliage and fruits of the former and the bark of the latter.

Characters: The four- to eight-inch leaves are shallowly three- to five-lobed, with large marginal teeth. Globular heads of seeds, commonly called buttonballs, are 1 to 1½ inches in diameter; they hang singly on long, slender stems three to six inches long, disintegrating when mature. The mottled bark is dark olive-green, composed of thin, irregularly shaped scales.

Location: Memorial Way is lined with London planes,[1] and there is also a specimen in the grassy area across NE Pacific Street from the University Hospital.[1]

Populus (Salicaceae)

Poplars are members of the willow family, and like them are dioecious, with minute flowers born in catkins, or aments.

Populus alba, white poplar.

This native of Europe and Asia has been widely introduced in America and is often an escape, especially because it suckers so profusely. It is an attractive tree if the suckering can be controlled.

Characters: The leaves are white-woolly underneath, two to five inches long, and three- to five-lobed with wavy or coarsely toothed margins.

Location: An example may be found southeast of the Wilson Ceramic Laboratory.

Populus nigra 'Italica', Lombardy poplar.

Native of Europe, western Asia and North Africa, the Lombardy poplar is often grown in rows along roadsides or as windbreaks.

Characters: Short, ascending branches produce the distinctive, columnar form of this tree. The leaves are 2 to 3½ inches long, triangular and somewhat diamond-shaped with rounded marginal teeth and flattened stems.

Location: Lombardy poplars grow along Stevens Way west of the Johnson Annex and

Star-shaped leaves and fruits of *Liquidambar styraciflua*. Photo: C.F. Brockman

Drama-TV, as well as in the vicinity of the Sylvan Theater.

Populus tremuloides, quaking aspen.

The quaking aspen is widespread in western North America into Mexico, across most of Canada to Labrador and south into northeastern United States. Clumps of aspen usually arise from a single clone, for this tree spreads by underground stems.

Characters: The leaves are nearly oval, one to three inches in diameter, with small marginal teeth and long, flattened stems. These petioles are responsible for the quivering of the leaves that give quaking aspen its name. In autumn, they turn a glowing butter-yellow. The bark is greenish-white and smooth except for black, warty markings.

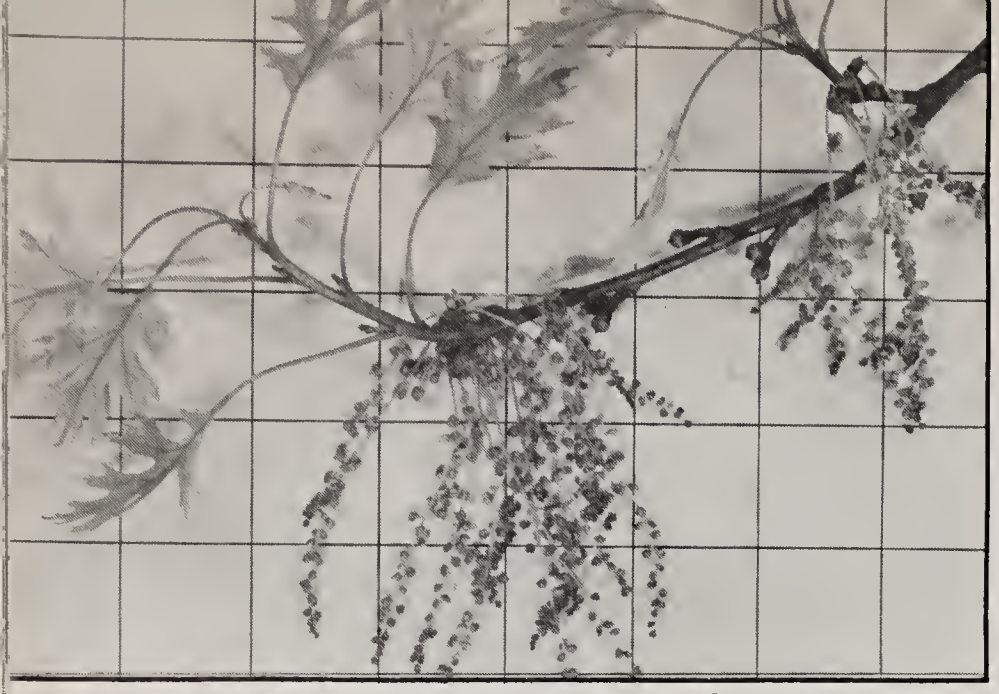
Location: There are quaking aspens east of McMahon Hall and along the Burke-Gilman Trail between University Way and Brooklyn Avenue.

Populus trichocarpa, black cottonwood.

Cottonwood is native from Alaska to California, eastward to western Montana, Wyoming and Utah. It may become an enormous tree.

Characters: The leaves, five to six inches long, taper from a broad, rounded base. Tiny, wind-disseminated seeds, each attached to a cottony tuft, are produced within flask-like capsules in elongated catkins. In the vicinity of these trees in early spring, seeds are often seen floating in the air or gathered in cottony masses in ground depressions. Also in spring a pleasant fragrance permeates the air nearby.

Location: There are several examples of cottonwood on campus: west of Parrington



Young leaves and staminate catkins of *Quercus coccinea*.
Photo: C.F. Brockman

Hall, south of the Mechanical Engineering Building, northwest of the Penthouse Theater, and along the Burke-Gilman Trail near the Plant Laboratory.

Quercus (Fagaceae)

Not all oaks have oak-like leaves, but if their leaves are lobed, they may be divided into two classes: white oaks have rounded lobes, while red oaks have sharply pointed ones. This is another monoecious genus with pendent clusters of staminate flowers and acorns produced in ones or twos. Winter buds are clustered at the tips of the twigs.

Quercus coccinea, scarlet oak.

The scarlet oak has the most brilliant autumn color of all species grown in our area. It is native of the eastern United States east of the Mississippi River and of Ontario, Canada. In maturity, it has an irregular, spreading crown.

Characters: The leaves are five to nine inches long with five to nine pointed, toothed lobes whose sinuses extend almost to the midrib. The acorns are oval, about an inch long, with a scaly, bowl-like cup at the base.

Location: Scarlet oaks are commonly planted on campus. Good specimens grow along Stevens Way in the vicinity of the Mechanical Engineering Building.

Quercus imbricaria, shingle oak.

This is one of the oaks with unlobed leaves. It is native to the eastern United States from New Jersey to Michigan, south to South Carolina and Louisiana.

Characters: The elliptical leaves are four to six inches long, slightly wider above the middle, with smooth margins; they are brown-hairy on the underside. The acorns are oval, to one inch long, with the lower third enclosed by a scaly cup.

Location: A specimen grows in the grassy area south of the large parking lot (N2), west of Memorial Way.

Quercus macrocarpa, bur oak.

This species grows in south Canada and the eastern United States, south to Texas and west to Montana.

Characters: The leaves are six to twelve inches long with five to nine rounded lobes; the sinuses near the center are deeply incised almost to the midrib. The acorns are ovoid, up to 1½ inches long, partly enclosed by a fringed cup. The twigs have corky wings.

Location: A handsome specimen grows in the rear of Denny Hall.[1]

Quercus rubra, northern red oak.

This native of southeastern Canada to Nova Scotia and of the eastern United States west to Minnesota and Nebraska has a broad, rounded crown in maturity.

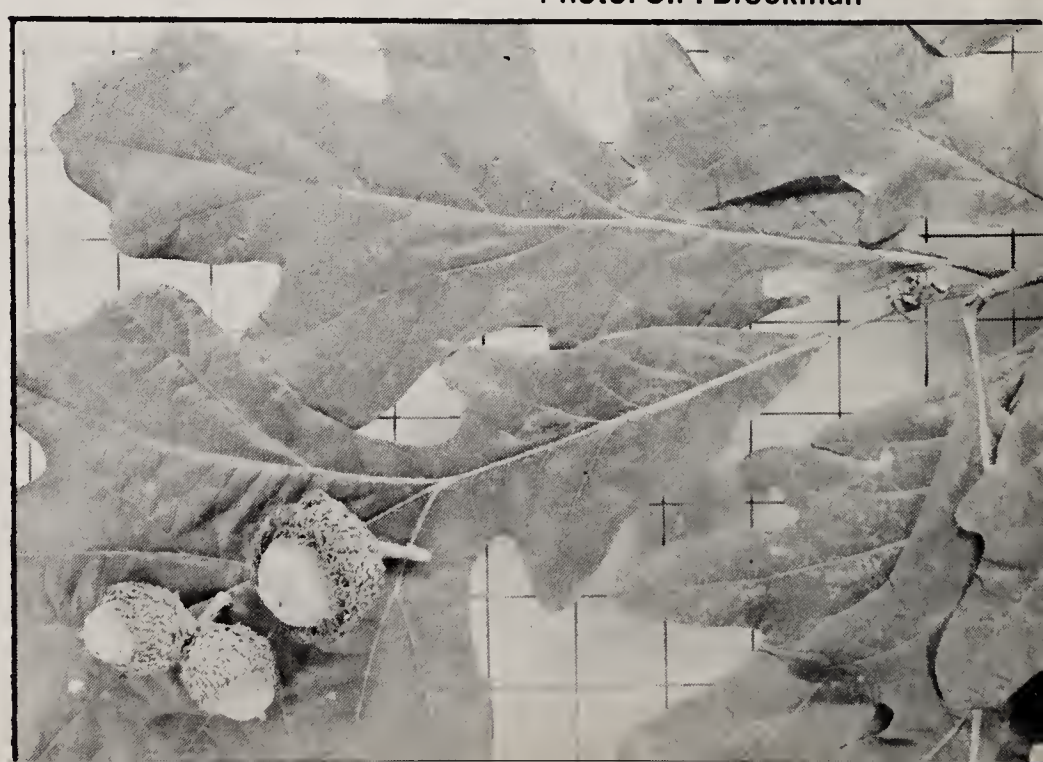
Characters: The leaves differ from those of *Quercus coccinea* in having seven to eleven lobes separated by sinuses extending halfway to the midrib. They turn red in fall. The acorns are ovoid, about one inch long, with a scaly, saucer-like cup.

Location: Large, handsome specimens grow in the vicinity of Denny Hall; smaller ones have been planted north of the Administration Building.

Quercus suber, cork oak.

The thick, irregularly fissured bark of this tree is the source of commercial cork, which is removed from the trunk every seven years.

Leaves and acorns of *Quercus macrocarpa*.
Photo: C.F. Brockman



Quercus suber is native of southern Europe and northern Africa.

Characters: The leathery leaves are evergreen, elliptical, one to three inches long with margins smooth or with widely spaced, pointed teeth. The acorns are ovoid, about an inch long, with a deep, scaly cup. The distinctive bark is described above.

Location: A specimen may be seen near the southwest entrance of the Student Union Building.

Some additional oaks on campus.

An Oregon white oak *(Quercus garryana),* native to the Pacific coast, may be found south of Benson Hall. This is the oak that grows in the prairies south of Tacoma and in the Willamette Valley and is the only one native in our area. North of Benson Hall is an English oak *(Quercus robur).* Superficially, these two species are somewhat similar, since the leaves of both are approximately of the same size with shallow, rounded lobes.

Rhamnus purshiana, cascara or buckthorn (Rhamnaceae).

Native to the Pacific Coast from British Columbia to California, cascara bark is the source of the laxative of that name. During the depression in the 1930's, whole families went into the woods to collect it for their livelihoods, especially near Chehalis, Washington, where it grows in large concentrations on cutover land. It is a handsome addition to the woodland garden.

Characters: The two- to six-inch leaves are elliptical and prominently veined, with slightly curled margins. The small, greenish-yellow flowers develop in clusters in the leaf axils. The black fruits are berry-like. The dark gray bark is usually typified by longitudinal cream-colored stripes.

Location; Cascara grows in the Drug Plant Garden and southwest of Hansee Hall along Klickitat Lane.

Rhus (Anacardiaceae)

This dioecious genus is represented on campus by two species which grow in shrubby, rhizomatous clumps. The striking leaves and brilliant fall color make them useful landscape subjects.

Rhus glabra, smooth sumac.

Rhus glabra is native from southern Canada to northern Mexico.

Characters: The odd-pinnately compound leaves are 11 to 24 inches long with 11 to 31 lance-like leaflets, two to five inches long, with toothed margins. The inflorescences are greenish, and the seeds are red in dense, hairy clusters, four to eight inches long. The twigs exude a milky fluid when crushed.

Location: There are plantings at the northeast corner of the Art Building and the northwest corner of MacKenzie Hall.

Rhus typhina, staghorn sumac.

Staghorn sumac is so named because of its velvety branches. It is native to the eastern United States west to Minnesota and south to northern Georgia; in southeastern Canada it extends to Nova Scotia.

Characters: Staghorn sumac resembles *Rhus glabra* except that the twigs are hairy rather than smooth.

Location: Plantings may be seen on the south side of the Staff Services Building and south of the Child Development and Mental Retardation Center.

Salix (Salicaceae)

The numerous species of willow are dioecious trees or shrubs, bearing clusters of minute flowers in structures called aments.

Salix babylonica, weeping willow.

The weeping willow is native to China, and is widely planted in America.

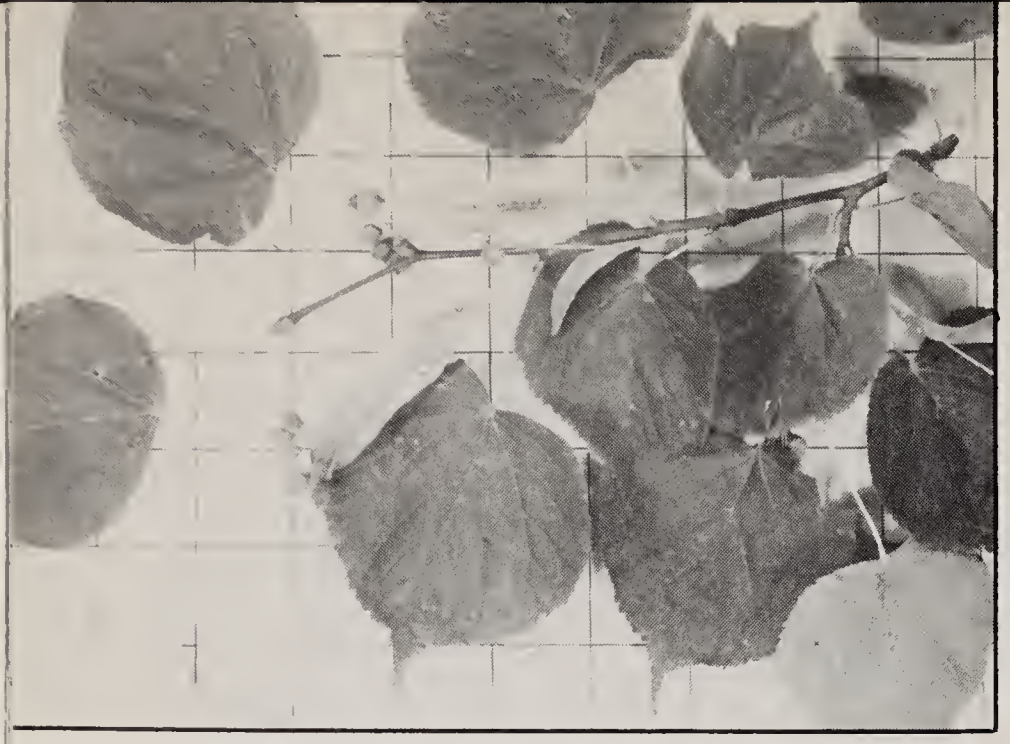
Characters: The lance-shaped leaves, three to six inches long, have finely toothed margins. The crown is broad with pendulous branches.

Location: A specimen known as the Napoleon Willow[1] grows in the grassy triangle across NE Pacific Street from University Hospital.

Salix lasiandra, Pacific willow.

Two varieties of this species are widespread in the west, from Alaska to southern California east to Wyoming and New Mexico.

Characters: The leaves are similar to those



Tilia cordata showing the curiously winged petioles of the fruiting clusters. Photo: C.F. Brockman

of *Salix babylonica* (above), but the crown is irregular with ascending branches.

Location: Pacific willow may be seen bordering Walla Walla Road back of the Stadium, adjacent to Union Bay.

Salix matsudana 'Tortuosa', corkscrew willow.

Native to China and Korea, the corkscrew willow was introduced to the United States in 1923 by the Arnold Arboretum, Boston.

Characters: The twisted branches and curled, lance-shaped leaves are the most striking characteristics of this unusual tree.

Location: A specimen grows at the southwest corner of Haggett Hall.

Salix scouleriana, Scouler willow.

This is one of the pussy willows, native to the Pacific coast and Rocky Mountain regions north to southern Alaska and east to North Dakota and New Mexico.

Characters: The leaves are broadest above the middle, one to four inches long, and usually somewhat hairy beneath. The furry, silky clusters of staminate flowers are distinctive in early spring. They are less compact, and therefore more noticeable, than the female inflorescences. Scouler willow is usually rather shrubby, with a ragged crown.

Location: Examples of this "weed tree" grow to the north and southwest of the Archery Range.

Sassafras albidum, sassafras (Lauraceae).

Native to the eastern United States, sassafras is the source of the medicinal tea, made from its roots and small twigs, that was used in past generations as a spring tonic.

Characters: The leaves, four to six inches long, may be elliptical, two-lobed (and therefore mitten-like) or three-lobed on the same branch. Hence it is affectionately termed "the mitten tree" by gardeners. The foliage turns a brilliant yellow or orange in the fall. The leaves and bark of the greenish twigs are aromatic.

Location: A large specimen grows at the southwest corner of Denny Hall;[1] another may be seen south of the Bagley Hall Annex.

Tilia cordata, little-leaf linden (Tiliaceae).

Native of Europe, little-leaf linden is one of many species of this attractive genus, which is characterized by unusually winged peduncles and by leaves with heart-shaped, slightly oblique leaf-bases, having small tufts of hair on the undersides.

Characters: The broadly oval, long-stemmed leaves, 1½ to 2½ inches long, have coarsely toothed margins and an abruptly pointed apex. The creamy white flowers, up to one-half inch in diameter, occur in few-flowered clusters on long stems. The persistent, narrow leafy bract forms the wing of the cluster of fruits, which are nut-like and about one-third inch in diameter.

Location: Little-leaf linden grows northeast of the Odegaard Undergraduate Library.

Trachycarpus fortunei, Chinese fan palm (Palmae).

This native of China is one of the few palms hardy in the Puget Sound area, and the specimens on campus are among the most mature to be seen here.

Characters: The fan-like leaves are about three to four feet wide with many pointed segments, fibrous on the margins, and borne on long, stout spiny stalks; dead leaves may hang on the trunk. The loosely branched clusters of small, yellowish flowers and black, oval fruits may be up to two feet long.

Location: The specimens in the rear of the Plant Laboratory are about 16 to 18 feet tall.

Ulmus (Ulmaceae)

The elms are characterized by a lopsided leaf base and by winged fruits (samaras),

whose wing is thin and wafer-like, encircling the seed. Many elms are subject to Dutch elm disease, which has decimated populations in the eastern United States. Enormous specimens used to line the streets of American towns, raising sidewalks and casting heavy shade.

Ulmus americana, American elm, and *U. rubra,* slippery elm.

These species have similar distributions in the eastern United States and southeastern Canada. In addition, they resemble each other in leaves and form.

Characters: The leaves are four to six inches long, elliptical, with prominent pinnate veins, doubly toothed margins and rough texture. The samaras are one-half inch long. The trunks usually divide into several large, ascending branches, giving the trees a typical vase-shaped form. They differ in the following ways: *Ulmus americana* has samaras deeply notched at the tip and hairy on the margin; its leaf buds are glabrous. *Ulmus rubra* has samaras only slightly notched at the apex and the seed cavity, rather than the wing margin, is hairy; its winter buds are large and rusty-pubescent.

Location: Ulmus americana may be found between Clark Hall and the Communications Building as well as south of the Administration Building; the former specimen is a scion of the original Washington Elm.[1] The large elm near the campus bus stop south of the Student Union Building is the Miller Elm,[1] an example of *U. rubra.*

Ulmus procera (campestris), English elm.

Native of Europe, *Ulmus procera* tends to sucker and is thus often used for hedgerows in England and France.

Characters: The leaves are oval, two to four inches long. The samaras have a reddish seed cavity, and the wing is deeply notched at the apex; they are produced in abundance. Wide-spreading branches form a characteristic broad, rounded crown; the smaller branches are typified by the presence of corky wing-like ridges.

Location: This is the most common elm on campus. Examples may be seen south of Bagley Hall, along Stevens Way north of MacKenzie Hall, and in the area northwest of Parrington Hall.

Umbellularia californica, California laurel or Oregon myrtle (Lauraceae).

Native to southwest Oregon and California, *Umbellularia* is a relative of the true laurel *(Laurus nobilis),* whose leaves decorated the heads of Greek heroes and which is the modern source of bay leaf. Its strongly aromatic leaves are sometimes substituted for bay leaves in soups and stews.

Characters: The evergreen leaves are narrowly elliptical with smooth margins, two to five inches long. The flowers are small and yellow in loose clusters. The olive-like fruits have a hard seed enclosed in greenish-purple flesh.

Location: A specimen grows on the southwest corner of Bagley Hall.

University of Washington Classes

Spectrum, The quarterly journal for Continuing Education, is sent free to those who have indicated interest in the University of Washington's night courses, adult education classes, concerts and other programs. Those who wish to obtain early notice of such classes and registration forms are urged to place their names on the mailing list by calling 543-2590.

Continuing Education

HISTORY OF THE PACIFIC NORTHWEST SINCE THE ICE AGE. This lecture series will explore the development of glaciers, volcanic activity, plants and animals, climate and land surfaces in the Pacific Northwest. Coordinator: Estella Leopold, Professor, Botany and Director, Quaternary Research Center. Mondays, October 6 - November 24, 7:30 - 9:30 PM; 8 sessions, $30.

BIRDS OF THE NORTHWEST. A lecture and field course on the natural history, behavior and life of Northwest birds. Instructors: Chris Stinson, PhC, Zoology, and Gus van Vliet, BA, Zoology. Wednesdays, October 29 - December 10, 7:30 - 9:30 PM plus three Saturday field trips to be arranged; 10 sessions, $58.

IDENTIFYING MUSHROOMS OF THE PACIFIC NORTHWEST. Designed for persons with no special scientific training or background, this course will acquaint students with the common mushrooms of the area. Instructors: Daniel Stuntz, Professor Emeritus, and Joseph Ammirati, Assistant Professor, Botany. Mondays, September 22 - November 24, 7:30 - 10 PM; 8 sessions, $58.

THE SECRET GARDEN IN YOUR YARD. For those wishing to have a garden where there is now a disaster area (or a little better). Instructor: Carter Kerr, Lecturer, Landscape Architecture; practicing architect and landscape architect. Wednesdays, October 1 - December 10, 7 - 9 PM plus some conference hours; 10 sessions, $64 ($103 two persons same household).

THE 1980 ERUPTION OF MOUNT ST. HELENS. This weekender program will be an up-to-date account of the eruption and its effects, and will also explore broader aspects of volcanic activity elsewhere in the Cascades and around the globe. Faculty are all currently and actively involved in the study of the 1980 eruptions. Coordinator: Anthony J. Irving, Research Associate Professor, Geological Sciences. Friday, October 17, 7 - 9:30 PM; Saturday, October 18, 9 AM - 4 PM; $29.

NORTHWEST COAST INDIAN CEREMONIALS. A fascinating Sunday program at Lake Wilderness, including a midday meal, exploring the winter ceremonials of the Kwakiutl and Bella Coola Indians. The importance of these occasions as a way of preserving social order and as entertainment will be considered. Coordinator: Harry Calkins, Northwest Indian culture specialist. Sunday, October 5, 10 AM - 5 PM; $39.

EXPLORING SEATTLE'S PARKS. On three consecutive Saturdays participants will explore the park-of-the-day (Ravenna, Discovery, Arboretum), identifying species, studying ecological roles, plant-animal relationships and the effects of natural and human disturbances. Instructors: Virginia Dale Adams, PhD, Ecology; A.B. Adams, MS, Botany. Saturdays, September 27, October 4 and 11; 9 AM - noon; $33.

NATURAL HISTORY OF THE SAN JUANS. Studying the animal and plant life at Friday Harbor on the San Juan Islands. The weekend will feature lectures and slides as well as hikes along the shore and in the woods. Instructor: Eugene Kozloff, Professor of Zoology, author. Friday, September 19, 8 PM through Sunday lunch, September 21. Fee includes two breakfasts, two lunches, dinner, dormitory lodging, $63.

LIFE AT THE WATER'S EDGE. A field trip class for children 8-12 years old and their parents. Each week different habitats will be visited — a pond, creek, mud flats, sandy beach, tide pool — to study the creatures and plants that live there. Instructor: David Haury, MA, Biology. Saturdays, October 4 -November 8, 9:30 - 11:30 AM; 6 sessions, $30.

Arboretum Courses

BASIC GARDEN MAINTENANCE. Soil preparation, winter maintenance, planning for spring gardens, and many other topics will be covered. Instructor: Chico Narro. Limited to 15; Saturdays, September 20-October 25, 10 AM-12 Noon; 6 sessions, $35.

PRUNING ORNAMENTALS. Outdoor demonstration class; warm clothing and waterproof footgear recommended. Instructor: Chico Narro. Limited to 25; November 1 and 8, 10 AM-12 Noon; 2 sessions, $15.

IDENTIFICATION OF NATIVE TREES AND SHRUBS. This field class, using plants in the Arboretum, will cover more than 60 species. Instructor: Carla Culver. Limited to 20; Saturdays, October 4-25 and November 1, 10 AM-12 Noon; 5 sessions, $25.

The Arboretum is open to the public for education and recreation, and classes are offered through the College of Forest Resources as a public service. Be sure to wear warm clothing and waterproof footgear for all courses that meet outdoors. Pre-registration is required for all courses; classes fill rapidly so early registration is recommended. For more information call 543-2730.

The New Zealand Horticultural Tour

October 17 to November 8, 1980

There is still time to join

Joe and Jean Witt on a horticultural tour of New Zealand.

Price: $2700.

For information call 543-8684

ARBORETUM ANNUAL REPORT

June 1, 1979 — May 31, 1980

JOSEPH A. WITT
Curator of Plant Collections

At last, after eight years without a director, the University of Washington Arboretum welcomes Dr. Harold B. Tukey, Jr., who assumed the position of Director of University Arboreta on June 1, 1980. On behalf of the Arboretum staff, I should like to say how pleased we are that this eminent educator and scientist has accepted the responsibility and challenge of administering the present facilities and developing the new and exciting Urban Horticulture Center at Union Bay. I would also take this opportunity to extend my personal thanks and gratitude and those of the staff to Dr. Dale W. Cole, Director, Center for Ecosystem Studies of the College of Forest Resources, who assumed administrative control after Brian Mulligan retired and fought well and vigorously to keep the Arboretum afloat financially and politically during the past eight years. It can be safely said that without his astute judgement, his hours of effort and his willingness to take on a tough fight, the Arboretum would probably have been lost to the University and this invaluable scientific and horticultural asset would have been converted into just another City park.

The Master Plan Update for the Arboretum in Washington Park, with the exception of that portion dealing with traffic and transportation, was approved by the Seattle City Council on October 8, 1979 and by the University Board of Regents on October 19. These steps cleared the way for several projects which had been planned but were awaiting final approval before they could be started.

Perhaps the most important project for the operation of the Arboretum is the irrigation system. As has been mentioned in past annual reports, the water lines throughout the grounds are in poor condition and our staff has spent many valuable hours in repairing leaks. A contract was let early this spring for the replacement planning for the system and, if all goes well, a contract for the actual work will be let in the fall. Certain portions of the new system will be automatic, a real advantage since irrigation will be done at night which will eliminate the conflict between visitors and sprinklers that now exists.

A smaller contract to develop plans for the "pit", that section of the Arboretum near the north entrance which is part of the abandoned route of the R.H. Thomson Expressway, was granted this spring. This area is to be converted into a "conifer meadow", an extension of the present Pinetum, and will improve the appearance of the north entrance. Again, grading, filling and planting should begin in the late fall or early in 1981. Other improvements suggested in the Master Plan will be studied and priorities established by the Arboretum and Botanic Garden Committee.

The City of Seattle is studying the problem of the traffic corridor along the west side of Lake Washington from the Mercer Island Bridge to Montlake. This includes the Arboretum, and it is hoped that traffic improvements along this route will benefit the Arboretum as well as the impacted neighborhoods.

Progress toward the development of the Union Bay facility goes slowly but steadily forward. A program for the building and the landscape has been submitted to the University Administration for approval and an architect to prepare preliminary concept designs should be appointed soon.

Operations

The Memorial Area on the hillside east of Azalea Way south of Loderi Valley has been prepared for its initial plantings. The large native Oregon maples which shade this slope were pruned to remove dead wood and low branches. This work was done by a local tree service, and it opened the area to more light and air. The planting beds are outlined by graveled paths which will allow visitors to see the plants at close range. The major path

was constructed as an Eagle Scout Project by Peter Marshall, who laid out the trail and directed a group of Boy Scouts in the work. The secondary trails and much of the hand-clearing was done with funds from the Foundation. We are delaying planting until the new irrigation system is installed.

The gates and paths in the Japanese Garden have presented formidable obstacles to the handicapped in wheelchairs. In order to make access easier for these visitors, the wooden barrier at the south gate was removed, the entrance paths widened and most of the major paths resurfaced and compacted to form a smoother surface.

The City of Seattle is now furnishing security guards for the Japanese Garden. They are on duty on weekends and in the afternoons and evenings after our staff has left. This is a welcome service both because it gives additional protection to the Garden and because the guards are a source of information to visitors who have questions about it.

The irrigation system in the nursery has been in as bad condition as that in the rest of the Arboretum, and it became so decrepit during the summer that we were forced to install a semi-permanent replacement. This consists of plastic pipes laid on the surface with sprinkler heads raised above the canopy of plants. It worked successfully during the dry summer and should continue to do so until the nursery is finally moved to the new location at Union Bay.

Heathers—*Erica* and *Calluna* species and cultivars—are grown in so many sites throughout the Arboretum that it is difficult for a gardener to see the best or most popular types without walking a great distance. A heather display bed which contains a collection of these shrubs is being planned in cooperation with the Pacific Northwest Heather Society. It is to be located on a slope in Rhododendron Glen and will contain about 15 or 20 cultivars representing the newest and/or the most successful for our area. This bed has been tilled and treated with weed killer to eliminate an infestation of morning glory. Planting will be done in the fall.

The disease problem which has plagued our flowering cherries, particularly the *Prunus subhirtella* cultivars, has not yet been controlled. On the advice of the Washington State Cooperative Extension Service, we have changed our spray schedule and are spraying for brown rot, a fungus disease. While this has not given us complete control, the cherries looked somewhat better this spring than last. However, since various disease problems have made such inroads into the Cherry Collection along Azalea Way, we plan to repropagate and remove a number of the worst trees.

Our staff is continuing the never-ending pruning, brush and tree removal, and general care of the trees and shrubs. We were fortunate enough to be able to hire a skilled pruner for a six-week period who worked through the Crabapple and Hawthorn Collections, which were badly in need of pruning.

Plantings

As in the past several years, most plantings were made either as replacements or to complete collections. However, we did make a special effort this spring to set out a number of *Magnolia* species and cultivars which had been in our nursery overly long. This was done because the Aboretum acted as host for the annual meeting of the American Magnolia Society in late March, and we wished to show the delegates as complete a collection of these ornamental trees as possible. Two other areas did receive additional attention. The planting of large-leaved *Rhododendron* species on the slope south of the Memorial Area suffered rather severely in the cold winter of 1978-79. Many of the dead or nearly dead plants were replaced this spring. The Azalea bed opposite the north entrance to the Japanese Garden was completely redone with several groups of Glenn Dale Azaleas. Beyond this, a total of about 300 plants of 100 kinds was planted throughout the Arboretum.

Seeds and Plants Acquired and Distributed

The largest group of plants received was the rhododendron hybrids which will go into the Memorial Area. So far, we have received 122 plants which will form the nucleus of the

planting. Other intersting acquisitions were a group of *Nothofagus* species, southern beech, collected by Mrs. Roger Spurr in Tierra del Fuego, Argentina and five tree species collected in the USSR by the Cary Arboretum, Millbrook, New York. In total, we received 309 lots of seeds and 155 kinds of plants during this time. This is slightly less than for the same period last year.

This is not a one-way street; in fact, the number of seeds and plants distributed from the Aboretum outnumber the plants received by it. Our seed exchange, staffed again this year by volunteers from Unit 66, distributed 2655 packets of seed, and some 175 other lots of plant materials were sent out during the year.

Educational Activities and Meetings

Approximately 50 members of the American Magnolia Society met in Seattle the last weekend in March and were hosted, in part, by the Arboretum. Despite periodic thunder showers, the delegates toured the Aboretum grounds and were able to see a wide range of these flowering trees. Fortunately, some of the lovely Asiatic species were still in bloom, even though the date was somewhat late.

Mr. Witt attended the Annual Meeting of the American Association of Botanic Gardens and Arboreta in Denver in July and the International Society of Arboriculture, Northwestern Chapter, in Vancouver, BC in mid-October. He is Vice-President of that organization. Mr. van Klaveren attended the Western Chapter of the International Plant Propagators Society meeting at Sacramento, California in October. In June he was a delegate to the Annual Meeting of the Tissue Culture Association held in Seattle. In addition, he made several visits to the Northwestern Washington Research and Extension Center, Mt. Vernon, to continue training in tissue culture techniques. Mr. Powell attended the short course on Community Tree Care sponsored by the Washington State University Extension Service and the Washington State Nurserymen's Association.

The Arboretum was represented by exhibits at the Northwest Horticultural Conference and at the College of Forest Resources' open houses. In addition, there were two displays at the Unit Council's Horticultural Exhibit and exhibits of rhododendron cut trusses at the Early Rhododendron competition in March and at the Seattle Rhododendron Society's annual show.

The number of lectures and demonstrations given by the staff increased somewhat over the same period last year from 28 to 37. The most popular topics were Mr. van Klaveren's propagation lecture/demonstrations and the slide show of Mr. Witt's tour of British gardens.

Continuing Education classes offered through the College of Forest Resources remain popular with the public. Twenty-one classes ranging from Plant Propagation to Bird Identification were offered, with the Arboretum Staff responsible for teaching five.

The photographic collection, primarily of trees and shrubs, has proven to be a valuable resource. In addition to staff use, it is in constant demand by garden clubs, publishers and others. Thirty-one collections were loaned out last year.

A report on the guide program appears in the annual report of the Unit Council; however, the volunteer guides and those responsible for their training and scheduling deserve a great deal of credit for their efforts. Literally thousands of children and adults were exposed to the Arboretum and its programs through these volunteers. Without the assistance of these and other unpaid but willing help, the small Arboretum staff would be unable to offer more than a token service to the public.

Weather

There were no unpleasant surprises from the weather during the past 12 months, but there was a slight continuation of the drought that has plagued us for the past several years. Precipitation for the year measured 976.3 mm (38.44 in) while our 20-year average is 986.0 mm. However, the spring months were somewhat wetter than average. Minimum temperatures were recorded in late January with -12.2°C (10°F) on January 28 and 29. Earlier that month some 11 inches of snow piled up, but for-

tunately it was light enough so that only a few branches and very few trees or shrubs were broken. Perhaps because the winter of 1978-79 was so severe, we lost few plants to the weather.

The spring of 1980 was one of the finest for wealth of flowers that we have experienced in many years. Magnolias, camellias, cherries, rhododendrons and azaleas bloomed heavily and over a long period. Indeed, about the only genera which didn't put on a superb display were those such as *Ceanothus* which are somewhat frost tender. A record of the year's weather appears below:

	Precipitation		Temperature*			
			High		Low	
	(mm)	(in)	(C°)	(F°)	(C°)	(F°)
1979						
June	19.9	(0.78)	33.3	(92)	8.3	(47)
July	20.7	(0.82)	36.7	(98)	8.9	(48)
Aug	19.0	(0.75)	30.6	(87)	12.0	(55)
Sept	37.2	(1.47)	35.0	(95)	11.0	(51)
Oct	111.8	(4.40)	26.1	(79)	5.0	(41)
Nov	54.2	(2.13)	17.8	(64)	1.1	(34)
Dec	230.3	(9.07)	15.0	(60)	1.1	(34)
1980						
Jan	113.1	(4.45)	13.3	(56)	-12.2	(10)
Feb	150.8	(5.94)	15.0	(59)	-2.2	(28)
Mar	81.1	(3.19)	16.7	(62)	-2.8	(27)
Apr	90.4	(3.56)	26.7	(80)	0.0	(32)
May	47.8	(1.88)	26.7	(80)	2.8	(37)
Total	976.3	(38.44)				

*Days with maximum below 0°C (32°F): 4
Days with minimum below 0°C (32°F): 29

Library

Some 30 volumes were acquired either by purchase or gift during the past 12 months. Among the more interesting and useful books are *The Heather Garden* by Harry van de Laar, a comprehensive study of the cultivation of heathers; *The Larger Species of Rhododendrons* by Peter Cox, a companion to an earlier volume on dwarf rhododendrons; *Manual of Dwarf Conifers* by H.J. Welch, a gift from Mrs. Leonard Wilcox, which deals with a very confusing group of great horticultural interest; *Rhododendron Notes,* Volumes 1, 2 and 3, republished by the Pacific Rhododendron Society from a publication by the Rhododendron Society, 1917, a valuable compilation of growing information and collectors' notes from the period of greatest plant introductions into England. A complete list of book accessions for the year follows:

Book Accessions June 1979-May 1980*

THE BOTANICAL COLLECTION MADE BY CAPTAIN F. KINGDON WARD IN THE EASTERN HIMALAYA AND TIBET IN 1924-25, by C.V.B. Marquand. Linnaean Society, 1929.

BULLETIN OF THE AMERICAN PENSTEMON SOCIETY, Volumes 14 (Parts 1 and 2) and 15.

CONTRIBUTIONS FROM THE DUDLEY HERBARIUM OF STANFORD UNIVERSITY, Volume 1, Number 4, 1930. "A Geographic and Taxonomic Study of the California Species of the Genus *Cenothus*", by Howard E. McMinn, and "Some Undescribed Plants from the Pacific States", by Elmer I. Applegate.

DISEASES OF PACIFIC COAST CONIFERS, by Robert V. Bega. USDA Handbook No. 521.

EHRET: FLOWER PAINTER EXTRAORDINARY, by Gerta Calmann. New York Graphic Society through Little, Brown and Company, 1977.

AN ENUMERATION OF THE FLOWERING PLANTS OF NEPAL, Volume 2, by H. Hara and L.H.J. Williams. British Museum (Natural History), 1979.

FLORA YUNNANICA, Volume 2, edited by Northwestern Botanical Institute of Science. Published by Academy of Science, Peking, 1979.

THE GEOGRAPHICAL JOURNAL, Volume LXXXIV, Number 5. The Royal Geographical Society, London, 1934.

GREAT GARDENS OF BRITAIN, by Graham Stuart Thomas. Mayflower Books, 1979.

THE HISTORY OF GARDENS, by Christopher Thacker. University of California Press, Berkeley and Los Angeles, 1979.

IRISH GARDENING AND HORTICULTURE, edited by Charles Nelson and Aidan Brady. Royal Horticultural Society of Ireland, 1979.

JAPANESE GARDENS, by Wendy Murray and the editors of of Time-Life Books. Time-Life Publishing, 1979.

THE LARGER SPECIES OF RHODODENDRON, by Peter A. Cox. B.T. Batsford, Ltd., 1979.

MANUAL OF WOODY LANDSCAPE PLANTS: THEIR IDENTIFICATION, ORNAMENTAL CHARACTERISTICS, CULTURE, PROPAGATION AND USES, by Michael Dirr. Stipes Publishing Co., 1977.

MANUAL OF DWARF CONIFERS, by Humphrey J. Welch. Theophrastus, 1979.

NATIVE TREES OF CANADA, by R.C. Hosie. Canadian Forestry Service.

NAN-FANG TS'AO-MU CHUANG: A FOURTH CENTURY FLORA OF SOUTHEAST ASIA, by Hui-Lin Li. The Chinese University Press, Hong Kong, 1979.

NOVITATES SYSTEMATICAE PLANTARUM VASCULARIUM 1971, Volume 8, edited by I.T. Vasil'chenko. Amerind Publishing Co., New Delhi, India.

NOVITATES SYSTEMATICAE PLANTARUM VASCULARIUM 1972, Volume 9, edited by I.T. Vasil'chenko. Amerind Publishing Co., New Delhi, India.

PLANTAE OCCIDENTALIS: 200 YEARS OF BOTANICAL ART IN BRITISH COLUMBIA, by Maria Newberry House. University of British Columbia, 1979.

PHENOLOGY OF CULTIVATED RHODODENDRONS IN THE LOWER MAINLAND OF BRITISH COLUMBIA, by L. Keith Wade. University of British Columbia, 1979.

RHODODENDRON NOTES, Volumes 1, 2 and 3. Originally published by The Rhododendron Society in 1917; republished by the Pacific Rhododendron Society in 1976.

SCENTED FLORA OF THE WORLD, by Roy Genders. St. Martin's Press, New York, 1977.

SHADE GARDENS, by Oliver E. Allen and the editors of Time-Life Books. Time-Life Publishing, 1979.

STREET TREES FOR HOME AND MUNICIPAL LANDSCAPES, by Gary L. Koller and Michael A. Dirr. Reprinted from *Arnoldia*, Volume 39, Number 3, 1979.

TREES AND SHRUBS FOR WESTERN GARDENS, by Gordon Courtright. Timber Press, 1979.

THE WITCH'S GARDEN, by Harold Hansen. Unity Press, 1979.

*The complete list of book accessions is on file in the Arboretum office.

*Highlights of the Annual Meeting**

The Arboretum Foundation's Annual Meeting on June 12th was especially well-attended this year because, for many of our members, it was a first opportunity to meet Dr. Harold B. Tukey, Jr., the new Director of Arboreta, who was the guest speaker.

Brief written reports from various Foundation committee chairmen were available at each seat. The following quotations are excerpts from the annual reports. Ken Sorrells: "All the news from the Tea House Fund Drive is good!...Construction must be completed by February of next year." Lee Clarke: "The new Memorial planting in the Arboretum is progressing very nicely." Mary Robinson: "Hopefully membership in the Arboretum Foundation has turned a corner."

President Collins opened the meeting with a welcome to the members. He thanked the co-chairmen of the dinner, Ruby Williams and Louise Czerniski, and Chris Anderson, who helped them. He welcomed guests from the Arboretum and the Arboretum Foundation staff, from the University of Washington and the City of Seattle, and commented that the Annual Meeting always seems to fall on or near Brian Mulligan's birthday!

Colonel Collins congratulated board member William Griswold for having recently received the American Rhododendron Society's Bronze Medal. He noted with regret the passing of two former presidents of the Arboretum Foundation, Ford Q. Elvidge and Mark Collarino, as well as that of C. Spencer Clark, a long-time member of the Board of Directors.

Mary Ellen Mulder, Chairman, presented the report of the Unit Council, which begins on the next page.

In Treasurer John Robinson's absence, the President called attention to the copies of the Price Waterhouse audit available at each table, noting that the Foundation ended the fiscal year with a balance of $684,115, having gained over $70,000 from interest and investments as opposed to about $53,000 for the preceding year.

Joseph Witt, Curator of Plant Collections, gave a report on the status of the Arboretum.

President Collins then gave his own Annual Report (the following article) and presented Dr. Philip Cartwright of the UW administration with a check for $15,000, the first of five annual installments pledged by the Arboretum Foundation for the support of the new Directorship.

Dr. Tukey was then introduced. He outlined the structure of the new Arboretum complex and the new Department of Urban Horticulture, encouraging continued cooperation between the Arboretum Foundation and the University.

Following Dr. Tukey's address, John Putnam presented the report of the nominating committee. Upon the election of the new officers, President Collins passed the gavel to newly elected President Donald W. Close, and the meeting was adjourned.

*The Price Waterhouse Audit and a complete list of the Directors of the Arboretum Foundation will appear in the next issue. The new officers are listed on the masthead inside the front cover.

President's Report

During the past year, we saw the final approval of the Arboretum Master Plan Update (a process initiated during the presidency of Stewart Rogers) in the determination by a hearing examiner that the Plan's Environmental Impact Statement (EIS) was adequate. The efforts by Ms. Rae Tufts of the Seattle Department of Parks and Recreation were instrumental in this favorable outcome of the process. The Plan is now being implemented by the replacement of the irrigation system and the construction of a suitable entry and associated plantings at the Northwest corner of the Arboretum. The Visitor Center is next, following an agreement between the Arboretum Foundation and the City of Seattle regarding future relationships between the two bodies.

The Second Arboretum Foundation Af-Fair was, like the first, superb. Glen Hunt and the Unit Council did another great job in telling the horticultural story to youth of the Seattle area.

The greatest progress was made in securing funds to rebuild the Tea House in the Japanese Garden. Although this was also a part of the Update Plan, financing for the project had to be obtained by means of a special fund drive. A committee was formed with John Robinson and Robert Behnke as Co-chairmen, assisted by Kenneth Sorrells and me. Ted Rathje and other members of Arboretum Foundation Unit 86 (The Prentice Bloedel Unit) assisted. An Executive Director, Grace Noble Morgan, was engaged. A program was developed which called for assistance from Seattle-area news media. This help was cheerfully given and the resultant publicity, together with hard work by committee members and their friends, has resulted (as of the date of the Annual Meeting) in over $120,000 in donations from corporations, Seattle business firms, Arboretum Foundation units and members, the Urasenke Tea Foundation from Kyoto, and the general public. Included were major donations from those instrumental in the original building of the Japanese Garden and its Tea House. The fund drive continues to receive donations because the area immediately surrounding the Tea House must be renovated on account of the arson fire and because future maintenance of the entire Japanese Garden must be ensured. At any rate, construction has started and will continue until completion in February 1981.

The arrival of Dr. Harold B. Tukey, Jr. as Director of Arboreta for the University of Washington is a source of great satisfaction to those of us who believe that the future health of the Arboretum in Washington Park is dependent upon a vigorous effort by the University to continue its development of a horticultural program geared to the interests and needs of the people of the Pacific Northwest. We of the Arboretum Foundation hope that the recent 28 percent cut in UW maintenance funds for the Arboretum (which includes all of the $15,088 formerly budgeted for the Japanese Garden) does not presage future neglect.

Although this is but an annual report, it represents also my thanks: to those who elected me in 1977 and subsquent years as president of the Arboretum Foundation; to those who helped as directors, committee chairmen and members in the three succeeding years; and to the fine staff of the Arboretum Foundation.

LEROY P. COLLINS, JR.

Annual Report of the Unit Council

The Unit Council is a very active part of the Arboretum Foundation. We have pursued a myriad of activities, instigated a great deal of positive enthusiasm for the Arboretum, and promoted interest and education in horticultural activities.

My by-line for my tenure of office is PARTICIPATION—participation by the members and the Council as a whole. Here is our record for the past year.

We carried out a most successful bulb sale in the fall. The extent and variety of of-

ferings was phenomenal. I would pit it against that of any nursery or nursery catalogue. We participated in the Northwest Horticultural Conference held in the Pacific Science Center, spreading the word about the Arboretum and the Foundation.

Our education committee sponsored three tours in the fall. The first was a concentrated look at fruits, nuts and berries. The second was a trip through Foster Island observing the migrating birds as well as the plant life. The last was an in-depth look at the Japanese Tea Garden.

In the winter a lecture series was held. Subjects were: Collected Conifers, Personal Experiences with Russian Flora, Alpine Meadows of Mt. Rainier, and Propagation and Maintenance of Rhododendrons. Winter gloom was further eased by a course in greenhouse management. These were also sponsored by the education committee.

The Unit Council sponsored the revision and printing of the Cutting Book—a very popular book for the new and not-so-new propagator. This book was first published by the Unit Council in 1959.

Spring brought forth a sparkling display at the Horticultural Exhibit as if all of the outdoors had been concentrated in one room.

The Unit Council and the Foundation joined hands and staged the Horticultural Af-Fair which is a one-day conference for high school students interested in horticulture. It was so well received last year that this year's announcement brought almost a full subscription by return mail.

Unit Council guides have been asked to give tours for 1850 people in the Arboretum and for another 500 in the Japanese Tea Garden during the past year. To meet the growing demand we set up a most ambitious and comprehensive training program which attracted a number of new guides. They explored basic botany, geology, ferns and mushrooms; they trekked up and down Azalea Way, Upper Road, Rhododendron Glen and much more. Gone are the days when the criterion for a guide was the ability to take a group out for two hours and not get lost.

The climax of our season was the 33rd Annual Plant Sale. What looked like Mt. St. Helens spewing over the parking lot was in reality a record-setting plant sale. Calmly and quietly Carol Hanson pulled a silver lining out of that black cloud. The gross profits this year were $64,547.82, the net $32,161.89. This is a profit increase for 1980 of $7,036.57.

The Unit Council is alive and healthy, active and strong, working with the Arboretum Foundation, our parent organization. Your continued support, interest and participation is encouraged. *MARY ELLEN MULDER*

Unit Council Chairman, 1979-1981

New Members of the Arboretum Foundation

We are pleased to welcome the following new members (March 1, 1980 through May 31, 1980): *Contributing*—Mrs.Kirby McDonald. *Sustaining*—R. Garrett Richardson, Mr. & Mrs. David Werstler. *Family*—Mrs. Karen Edensword-Breck, David Johnson, Mr. & Mrs. Victor Larsen, Mr. & Mrs. M.J. Maloney, Donald Millikan, Stephen Smith, Mrs. Carolyn Stark, Mrs. Judy Wagner. *Annual*—Constance M. Albrecht, Mrs. Weslie Andres, Mrs. George Bartholomew, Benespa', Margaret S. Berger, Charlotte Boyle, Vicki L. Bratton, Mrs. Robert Bridgeforth, Maureen Brinck-Lund, Mrs. Madeline Brown, Mrs. Nancy Brown, Mrs. Adele Burnett, Ms. L.M. Burnett, Nancy Catalano, Mrs. David Clark, Steve Corrington, Mrs. Marguerite Davison, Mrs. John DeHorn, Mrs. Carmen De Lelio, Kristen Demme, Mrs. Marty Dennison, Mrs. Robert Dixon, Donald T. Evans, Hazel Fiedler, Mrs. D.L. Fitzpatrick, Keith Geller, John Gladney, Mari C. Jalbing, Doreen Kost, Mrs. Elhri Larsen, Lillian Lehmen, Mrs. Virginia Mack, Margaret Marshall, Mrs. Gary McGavran, Mrs. Thomas K. Miller, Mrs. Janet Murray, Mary O. Murray, Mrs. Sharon Muth, Mrs. Judith Nevins, B.P.B. O'Callaghan, Louis Opfer, Mrs. Pauline Patton, Carolyn Peterson, James Piecuch, Don Plant, Mrs. Alice M. Robb, Mrs. M.L. Robbins, Christine Rogers, Mary S. Robson, Mrs. Mamie Rockafeller, Mrs. M.M. Tuohy, Mike Van Buskirk, June E. Wallace, Mrs. Charles Walters, Joy P. Worchester, E. Annette Wright.

We are also grateful to the following who have increased their dues to: *Life*—Simpson Timber Company. *Sponsor*—Mrs. E. Stanley Boozel, Harry J. O'Donnell.

In Memory of Ford Quint Elvidge

Ford Elvidge had a many-faceted career. He brought administrative talent and expertise to the various posts he filled. He was in the practice of law for many years in this area, was a past president of the Seattle Bar Association and of the University of Washington Law School Alumni. Those who knew him well recall that in his civic endeavors he brought a quiet perseverance to the task at hand. He was a courteous gentleman of unswerving loyalty.

Quite unexpectedly he was appointed Govenor of Guam, where he served with distinction from 1953 to 1956. Mrs. Elvidge recalls that these were especially rewarding years for them. He was the second civilian Governor of Guam, as prior to his term the island was under Navy supervision. Mrs. Elvidge writes in her delightful book, *Guam Interlude,* "The Governor's problems were a challenge that tested his legal ability, his physical endurance and his sense of humor." In addition to the duties of his office he supervised the construction of Government House. The Elvidges also had a major share in developing the spacious grounds surrounding the residence. After leaving Guam, Mrs. Elvidge wrote, "We appreciate the opportunity that enabled us to have a part in shaping the destiny of an important—though small—segment of the United States of America."

At the Annual Meeting of the Arboretum Foundation in 1966 Ford Elvidge was elected President, serving in that capacity until 1968. In 1974 he was made an honorary member of the Board, serving until his recent death. As in other tasks, he displayed the quiet, persuasive leadership that had become his consistent role. Those who were on the Active Board of the Foundation at this time recall his ability of listening to various sides of a discussion and then bringing his judgment into play on the situation. His commitment to solving difficult issues was widely recognized.

The Arboretum owes Ford Elvidge a debt of gratitude. It has lost a valued friend and supporter.

ROSAMOND P. ENGLE
August 1980

Book Reviews

THE LARGER SPECIES OF RHODODENDRON, by Peter Cox. Set, printed and bound in Great Britain by Fakenham Press Limited, Fakenham, Norfolk for the publishers B.T. Batsford Ltd., London, 1979. 352 pages, illustrations, maps, color plates, black and white photographs and line drawings. Price approximately $35-40.

Nature has equipped rhododendrons with great variability. In Peter Cox's first book, he discussed the dwarf range of species and in this, his second book, he describes the larger species of rhododendrons.

Some of the mysteries of their evolution, history and distribution are examined in light of the latest facts and theories, both those familiar and some more controversial. The final answers to the questions of where this complex genus began and which species are the most primitive appear yet to be solved.

For the specialist, there is a segment of "how to" advice on collecting seeds and specimens in the wild, based on Peter Cox's personal experiences and upon information drawn from the observations of other successful collectors.

Mr. Cox makes the point that he hopes this book "does not put off those people who have only very small gardens. Surely everyone who is interested in rhododendrons will have room for one or two of the smaller species included in this book." Indeed, it should not. The discussions and informative descriptions are so detailed and comprehensive that they are excellent guides to selection of proper plants for our gardens as well as the identification of species rhododendrons already established there. All the known, larger species are sketched in the section titled "Species Descriptions", even those considered as not in cultivation.

Conditions of soil, climate, watering, pest and disease control are all explained in clear terms. His comments on the horticultural level of gardening reveal a wide experience gathered at home (Scotland) and from knowledgeable sources world-wide. There is a wealth of practical cultural instruction, from soil preparation through mulching and pruning, for us to draw on in evaluating our garden requirements and limitations.

Recently in the horticultural world, there has been some discord over the proposed new changes for the revision of classification of the rhododendron genus. Mr. Cox explains here in some detail the new nomenclature and the more scientific nature of such aids as analysis of

chemicals in the leaf waxes and microphotography of scales and hairs which play a part in the current revisions. It does help the amateur gardener to understand more clearly what the botanists and taxonomists are attempting, though learning the new system, particularly the discarding of old names and assimilating new ones, may not be appealing.

It is apparent that Mr. Cox has traveled extensively, for many of his remarks and conclusions stem from his visits to gardens in distant parts of the world. Comments from prominent rhododendron growers in North America, Australia, New Zealand and some Scandinavian countries have been added to his own views.

This book would not be complete without the latest update on methods of propagation. Comparisons are made between the approach to propagation as practiced in the United States and in Britain. Anyone should be able to multiply his supply of rhododendrons after study of this chapter on propagation treatments, hormones, mediums and, what is very important, how to bring on these propagations after they have rooted, germinated or layered.

Seldom does one find as good a section on the preparation and showing of rhododendron trusses as we find here. Photographing of flowers and plants is not neglected. Enlightening to many of us is a plea for conservation of rhododendrons in the wild; it seems increasingly important that preservation of plants in the wild be considered before it is too late.

The maps, line drawings, color plates and the black and white photgraphs by skillful artists enhance the reader's interest in the text and provide a more colorful book.

Peter Cox has written a fine reference book as well as one that is entertaining to read. There are new material about rhododendrons, interesting accounts of experiences, plus lists of societies and species nurseries.

This book, *The Larger Species of Rhododendrons*, is of immense value to all gardeners who have the conditions suitable for raising these beautiful plants and trees and, also, to many who do not.

GWEN BELL

THE HEATHER GARDEN, by Harry van de Laar. Translated into English from the original Dutch. Foreword and adaptation, David McClintock. (Original published in the Netherlands, 1974.) Collins, London, 1978. 146 pages text, plus glossary, dictionary of scientific epithets, bibliography, list of nurseries (UK and North America only) and index. 47 color photographs. May 1980 price, $12.30.

Mr. van de Laar, having been for 20 years on the staff of the Research Station at Boskoop, Holland in the midst of 1000 highly successful nurseries, and with a particular interest in heathers, is an outstandingly experienced and informed author on the subject. It may be added that Holland is a natural habitat for three heather species.

It must be stated at the start that this book apparently has undergone something of a sea change from its Dutch beginning, having been extensively adapted for British users when the English translation was published. As Mr. David McClintock (who did the adaptation) explains in his foreword, the British Isles — though separated from the Netherlands only by the North Sea — have a milder climate, soil differing from the black peat that is common in Holland, and differing water supplies. Additions to the original had also been made in Dr. Gerd Krussmann's German version of 1976, and these, too, have been incorporated into the English edition. But Mr. McClintock states that the original was adhered to wherever possible, and Mr. van de Laar gave his consent to the modifications that were made. Although the inclusion of both the direct translation and the suggestions for British users would have made a weightier tome, it is still a bit disconcerting, when reading so excellent a reference book, not to know what is from Mr. van de Laar's original and what is Mr. McClintock's adaptation.

This said, this book should endear itself to the hearts of gardeners because the advice it gives is experienced, reasoned, specific — and concise.

In his chapter on soil Mr. van de Laar recommends a surprisingly low pH for heather and other ericaceous plants: 4 to 5, depending on whether the soil is peaty, sandy or a clay-sand mix. But his explication of proper soil conditions and how to achieve them is very clear, stressing the advantage of incorporating sufficient organic matter to provide moisture retention, eventual nutrients and symbiotic activity. There are directions for cautious application of organic fertilizers, and a warning against artificial fertilizers which give faster growth but less sturdy plants.

Garden design is a matter of taste and in this connection the excellent color photographs are most instructive. They include, besides individual varieties, numerous felicitous natural-looking plantings and one with a tall, thin conifer appearing a bit as if on the verge of blast-off from the midst of a pink-flowering bed.

The sections on watering, pruning, pests and diseases, and weed control are sound and concise. This book stresses close planting for quick cover in small gardens. It mentions mulching only as a necessity if young plants are spaced at sufficient distance to give them room to grow into the finest and longest-lived plants.

The sections on layering and particularly on cuttings are especially good, with helpful drawings to illustrate exact procedures.

For the studious reader there is a brief resume of the systematic botany of heathers, and a number of pages deal with naming and the accepted rules of nomenclature — a particular interest of the adapter, Mr. McClintock.

The list of cultivars, which the English adaptation left unaltered, is more selective than those of recent English writers but valuable as indicative of hardiness in the Dutch climate. It contains additional information on year of introduction and by whom if known.

The sections on compatible plants describe a relatively short but interesting range of conifers and other trees and shrubs, particularly other Ericaceae, with a list of the smaller rhododendrons one could use in a heather garden.

A most useful book.

DOROTHY METHENY

GARDEN GUIDE TO WOODY PLANTS. A Plant Handbook: Selection and Care of Woody Plants. 1979. Bulletin No. 24, The Connecticut Arboretum, Connecticut College, New London, CT. 06320. Single copies may be ordered from the Connecticut Arboretum for $2.50 plus 60¢ postage.

This 100-page handbook is about selection, planting and care of woody ornamental plants. Flowering shrubs, trees, vines and groundcovers are separately listed by season and color of bloom. A list of trees for streets and parks is included. Special features of various species are also catalogued, such as bark, fruit, autumn color and ability to survive in poorly drained, dry or seaside conditions.

The last half of the handbook briefly outlines the principal features of approximately 500 woody trees, shrubs and vines. They are arranged alphabetically by botanical name. Being intended for use in the northeastern part of the United States, the information does not always fit our Pacific Northwest conditions.

RUTH VOROBIK

CUTTINGS THROUGH THE YEAR, edited by Joy Spurr. 3rd edition of this manual, originally published in 1959. Arboretum (Foundation) Unit Council Governing Board, Seattle, WA, 1980. Price $3.00 (plus 59 cents for postage and handling if ordered from the Arboretum Foundation, c/o UW Arboretum, XD-10, Seattle, WA 98195; phone: 325-4510).

One of the greatest joys of gardening is to be able to take a piece (cutting) of a favorite plant and to grow from it a duplicate. Perhaps the plant is in Grandma's garden. No one knows the name and it is no longer found in nurseries.

With this book in hand all the procedures are so carefully and accurately detailed that even the beginner can create a new plant from a cutting. The experienced gardener should have a copy of this expanded 3rd edition for reference on the best month to take cuttings of different species and cultivars, and for the new section on grafting.

The "magic" of plant propagation is still there—this book just takes away the "hocus-pocus"

BETTY GRAY

Announcements from the Unit Council

UNIT COUNCIL MEETINGS are scheduled for September 18 and November 20, 1980 and March 19 and May 21, 1981 at St. Stephen's Episcopal Church in Laurelhurst from 9:30 to noon. Horticulture Chairman, Lee Clarke, will present a display of plant material. Joe Witt will bring us up to date on Arboretum news. In September, Dr. Harold B. Tukey, Jr., Director of UW Arboreta, will discuss the direction of his Department of Urban Horticulture and related educational programs.

A workshop on COLLECTING AND PROPAGATING PLANTS FROM SEED will be offered on three Mondays in October:

October 6 — "Seed Collecting in the Arboretum", with Frances Roberson. Meet at Arboretum Foundation Office.

October 13 — "Physiology of Seeds, Treatment and Planting", with Joe and Margaret Miller. Patricia Calvert Greenhouse.

October 27 — "Care and Transplanting of Seedlings", with Cliff Lewis. Patricia Calvert Greenhouse.

See page 19 for programs planned for winter and spring. Call 325-4510 for reservations.

MOLLY WOLFE

Unit Council Governing Board

Officers—General Chairman, Mrs. Gordon Mulder (Mary Ellen). 1st Vice-Chairman, Membership, Mrs. George Frazier (Vera). 2nd Vice-Chairman, Education, Mrs. William Wolfe (Molly). 3rd Vice-Chairman, Greenhouse, Mrs. John Halloran (Darcy). Secretary, Mrs. Gary Goedecke (Sharon); Assistant, Mrs. Frank Anderson (Chris). Finance, Mrs. Douglas Kiefer (Karole). Past General Chairman, Mrs. Daniel H. Coleman (Sally Sue). Honorary, Mrs. Donald Graham (Juanita).

Committees—Guide Coordinator and Native Guide Training, Mrs. David A. Taft (Sheila); Native Guide Scheduling, Mrs. James Level (Virginia); General Guide Training, Mrs. Paul McElwain (Ginny); General Guide Scheduling, Mrs. Jan Hansen (Carol); Japanese Garden Training, Mrs. C.E. Vorobik (Ruth); Japanese Garden Scheduling, Mrs. Paul Thienes (Eleanor); Explorers' Walks, Mrs. Ray Fiedler (Hazel); Hospitals, Mrs. Brian Skidmore (June); Schools Mrs. James Level (Virginia); Af-Fair, Mrs. Raymond Taggart (Doris). Herbarium, Mrs. J.R. Sambrook (Mary) and Mrs. W.E. Williams (Ruby). Horticultural Exhibit, Mrs. Dean Wilson (Suzanne). Horticulture, Mrs. Fred Clarke, Jr. (Lee). Hospitality, Mrs. Mark Johnson (Becky). Research/Slides, Mrs. Winston Peterson (Marcia). Sales: Bulb, Mrs. Arthur Gardiner (Jeanne) and Mrs. N. Stewart Rogers (Jane); Plant, Mrs. Claude Sourbeer (Arlene). Unit Program Planning, Mrs. Leonard B. Lockett (Margaret). Unit Quarterly News, Mrs. Lucien Moncini (Pat). District Representatives: City Wide, Mrs. James A. Curry (Jeannine); East Side, Mrs. Grant O. Barker (Pat); Kitsap-Bainbridge, Mrs. Philip C. Keith (Shirley); Mercer Island, Mrs. Fred Meine (Deanna); North East, Mrs. Clinton Martin (Anne); North Shore, Mrs. James Schilling (Marge); North West, Mrs. Norman Hardy (Esther); South End, Mrs. Fred Czerniski (Louise); West Seattle, Mrs. Robert Nack (Dory).

CALENDAR OF EVENTS

Arboretum Foundation		Unit Council	
Executive Committee	October 9	Governing Board	October 2
	November 13		November 6
Board of Directors	December 11	Quarterly Meeting	November 20

EXPLORERS WALKS (see Back Cover for time and dates)

10TH ANNUAL ARBORETUM FOUNDATION FALL BULB SALE, October 1 & 2 (see page 18 for details)

NOHS FALL PLANT SALE, October 3 & 4 (see page 17 for details)

UNIT COUNCIL SEED WORKSHOPS, October 7, 13 & 27 (see page 42 for details)

REGULARLY SCHEDULED: Greenhouse Day, every Tuesday; Herbarium Committee, 1st Friday; Northwest Natives Study Group, 3rd Monday; Rhododendron Study Group, 1st Monday; Rock Garden Study Group, 3rd Wednesday.

For information call 325-4510

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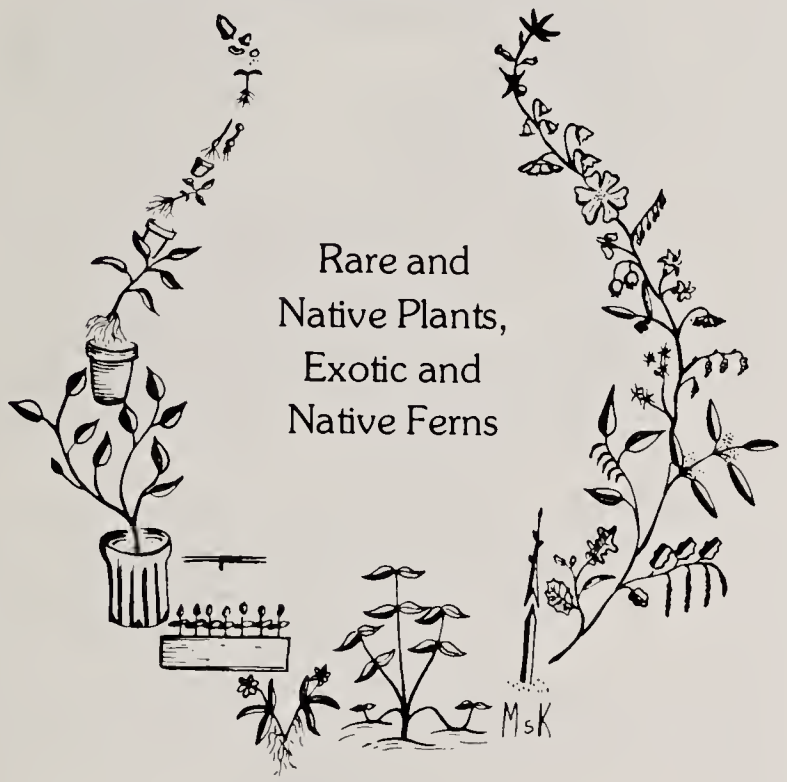

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A handy map at the back will help you locate special plantings.

The plant list will help you locate specific plants.

Or join the Explorers' Walks meeting the fourth Wednesday of each month except December: September 24, October 22, November 26. Special walks this fall are scheduled for Tuesdays, October 7 and November 4.